

## HILTON HEAD ISLAND, SC BEACH CONDITION SUMMARY REPORT

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### 1. INTRODUCTION

This summary report describes the beach conditions along Hilton Head Island, South Carolina based upon the May 2004 beach monitoring survey. The purpose of this report is to document beach conditions and determine beach fill requirements for the proposed 2005/06 Hilton Head Island Beach Renourishment. The 1997 Beach Renourishment Project and 1999 South Beach Beach Fill pre- and post-project conditions, along the respective shorelines, are used as the basis of comparison for existing beach conditions and potential sand nourishment needs. The analysis addresses conditions along specific reaches of the island which are defined as:

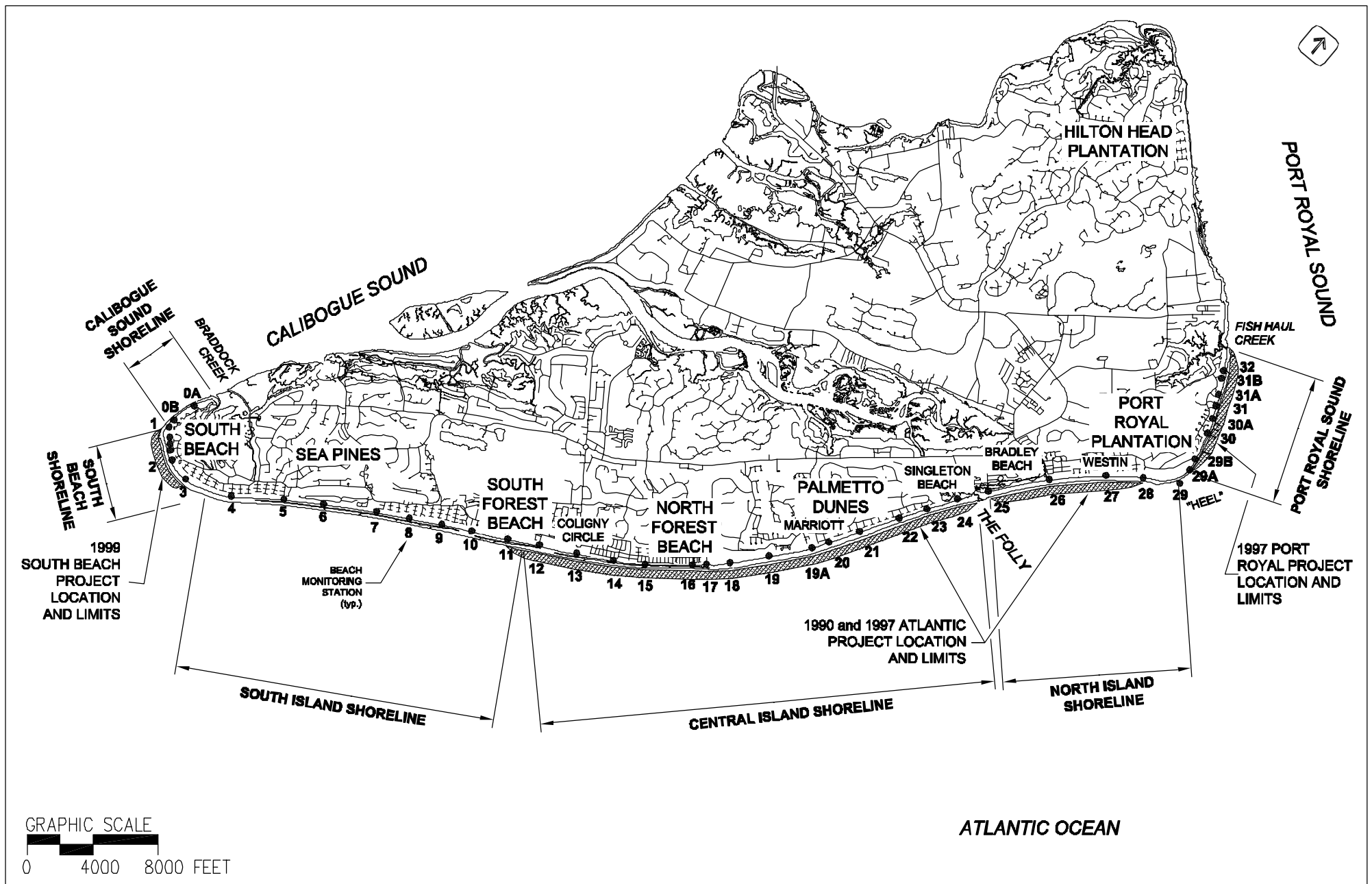
- Calibogue Sound Shoreline (Braddock Cove to South Beach)
- South Beach (includes the 1999 South Beach project area)
- South Island (South Beach to Alder Lane in South Forest Beach)
- Central Island (Alder Lane in South Forest Beach to The Folly)
- North Island (The Folly to Port Royal Sound)
- Port Royal Plantation (Port Royal Sound to Fish Haul Creek)

The location of these shoreline reaches and the 1997 and 1999 beach nourishment projects are depicted in **Figure 1**.

As has been customary in the Town's beach monitoring program, volume change was computed as the total change above the -10 ft NGVD<sup>1</sup> elevation along the Calibogue Sound and Atlantic Ocean shorelines and above the -5 ft NGVD elevation along the Port Royal Sound shoreline. Shoreline change is defined as the change in location of the seaward limit of the "dry beach berm" (+5 ft elevation). The berm width is defined as the

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<sup>1</sup> NGVD: National Geodetic Vertical Datum of 1929 (1929 Mean Sea Level). All elevations in this report are in feet relative to NGVD. All horizontal coordinates are referenced to the South Carolina State Plane Coordinate System, North American Datum of 1983 (NAD83).



**Figure 1:** Location of Hitlon Head Island shoreline reaches and past beach nourishment projects.

width of the dry recreational beach (+5 ft and above) measured during a particular survey compared to the April 1997 pre-construction survey for the Atlantic and Port Royal Sound shorelines. The baseline for the 1999 South Beach beach fill project is the January 1999 (pre-construction) survey.

The surveyed beach profiles are plotted in **Appendix A**<sup>2</sup>. The physical locations of the landward and seaward limits of comparison are presented graphically on the profile plots as vertical dashed lines.

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<sup>2</sup> In order to maintain consistency between volume calculation time periods, profiles that did not extend to the calculation limits were manually extrapolated to the seaward limits based on the trend of the lower portions of all recent profiles collected at a given station.

## **2. BEACH CONDITION SUMMARY**

The following discussion summaries beach volume and shoreline conditions for the specific reaches of shoreline defined above.

### **2.1 Calibogue Sound Shoreline**

The Calibogue Sound shoreline is represented by beach monitoring stations 0A and 0B. The beach is located between the wood-panel groin at Braddock Creek and beach monitoring station 1 at South Beach. The beach along the shoreline is relatively narrow and steep and affected more by the tidal flows associated with Calibogue Sound than oceanfront, wave-induced processes. Since 1986, the beginning of the Town's comprehensive beach monitoring program, this reach of shoreline has been relatively stable, experiencing only minor fluctuations in shoreline position and sand volume.

The computed beach volume changes for this reach of shoreline for the period October 1997 and May 2004 are summarized in **Table 1**. This represents the period since completion of the 1997 nourishment project. Over the six and one-half year period, this Calibogue Sound shoreline gained approximately 1,000 cubic yards in the net. Considering the small magnitude of the measured volume change and the inherent errors in beach surveys, it can be assumed that this reach of shoreline was essentially net stable over the period.

Accordingly, the reach of shoreline does not require sand nourishment at this time. The only engineered activity that may be considered to benefit this shoreline includes raising the crest elevation of the landward end of the Braddock Creek groin and sand-tightening the entire structure with a geotextile fabric placed along the southern side of the wooden panels.

### **2.2 South Beach Shoreline**

The South Beach shoreline, represented by beach monitoring stations 1 through 3, has historically experienced large fluctuations in shoreline location and beach volume. The history of shoreline change along this reach of shoreline is summarized in Olsen Associates, Inc. (1998).



**Table 1:** Volume change summary for Calibogue Sound and South Beach shorelines.

Monument	Shoreline Reach (feet)	Volume Change Above Noted Elevation (cy)					
		+5'	+3.3'	0'	-3.3'	-5'	-10'
Calibogue Sound Shoreline							
H00A	2,130	-200	-1,600	-6,800	-9,600	-9,400	-7,700
H00B	1,020	900	900	1,000	2,900	4,600	8,800
Total	3,150	700	-700	-5,800	-6,700	-4,800	1,100
South Beach Shoreline							
HI01	570	3,600	4,900	3,500	-100	-900	8,900
H01A	510	-1,600	-3,900	-11,000	-19,600	-24,200	-28,900
H01B	400	-4,800	-9,200	-18,700	-28,000	-31,300	-36,500
H01C	500	-4,300	-9,900	-19,800	-27,400	-28,500	-28,000
HI02	650	10,300	16,200	31,000	47,000	55,500	79,700
H02A	730	10,400	16,100	27,600	39,400	45,000	41,700
HI03	1860	19,400	31,300	49,300	55,900	58,100	72,500
Total	5,220	33,000	45,500	61,900	67,200	73,700	109,400

As a result of recent significant shoreline recession, which began in about 1992, 3,000 feet of the South Beach shoreline were restored in 1999 as part of an emergency beach fill project for that area (Olsen Associates, Inc., 1998). This restoration was funded and implemented by the Town of Hilton Head Island. That project included the placement of about 220,000 cubic yards of beach compatible sand from a borrow area at Barrett Shoals.

Since the completion of the 1999 project, the South Beach shoreline has continued to change. The western reach of the South Beach shoreline has continued to experience highly localized erosion while the more eastern reach has experienced significant accretion. **Table 1** summarizes the beach volume change that occurred along the shoreline reach between February 1999 and May 2004<sup>3</sup>. In the net, the South Beach shoreline gained almost 110,000 cubic yards of sand between February 1999 and May 2004. This net gain, however, is the balance of modest accretion (about 10,000 cubic yards) at station 1, about 195,000 cubic yards of accretion between stations 2 and 3 and almost 95,000 cubic yards of sand losses between stations 1A and 1C.

<sup>3</sup> Volume calculations were performed using the average end area method. The effective reaches between beach profile monitoring stations are listed in Appendix A.

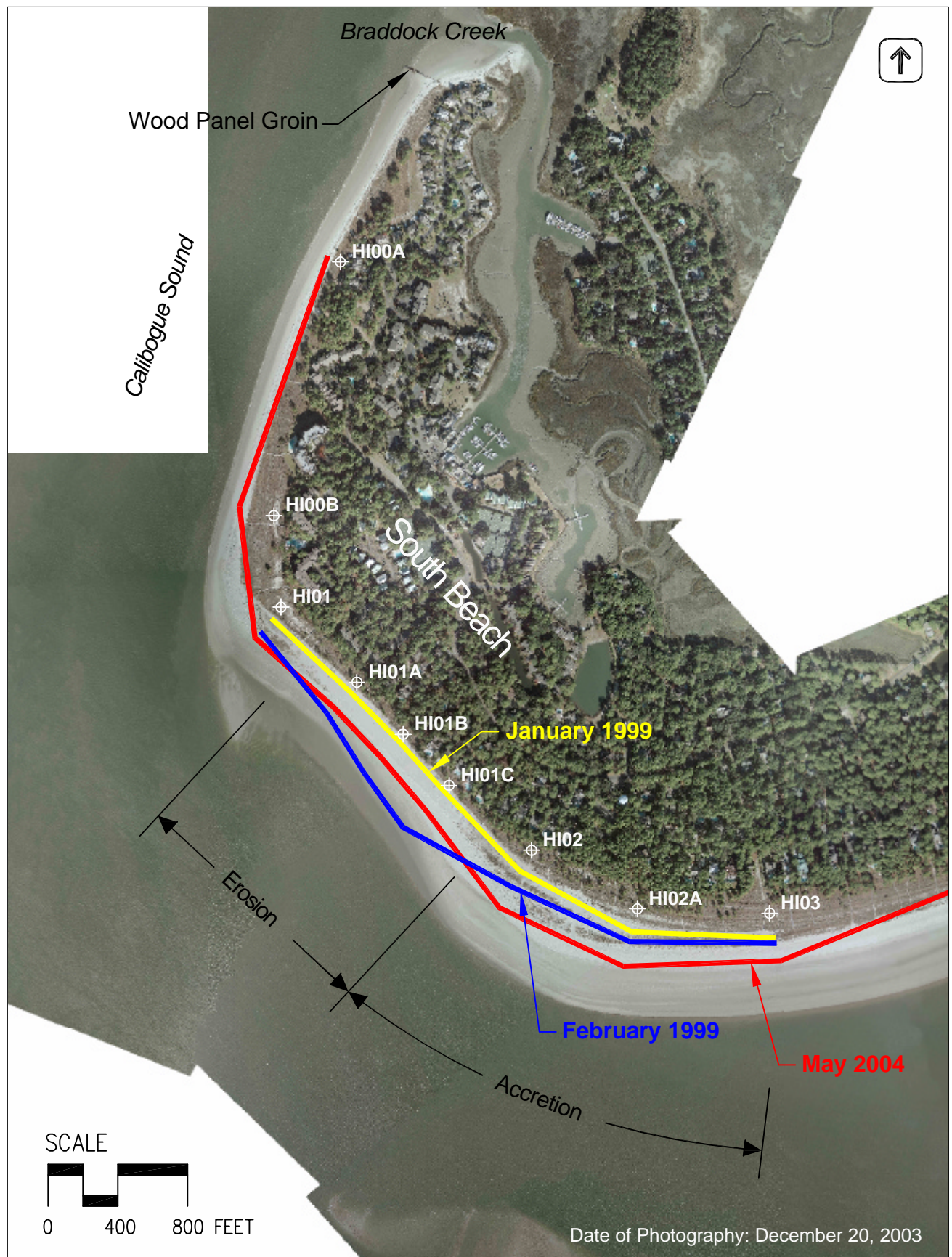
This shoreline change trend is also represented through a comparison of beach berm locations in January and February 1999 and May 2004. These berm locations are depicted in **Figure 2**. The areas of notable erosion and accretion over the period are also noted in the figure. Localized changes in the berm location since completion of the 1999 project have included more than 160 feet of recession at station 1C and about 145 feet of advance in the area of station 2A.

The recently observed shoreline change pattern along the South Beach shoreline is the result of continued erosional stress along the western portion of the 1999 project shoreline and the influx of a large volume of sand along the eastern section of the project shoreline from the oceanfront shoreline. The location and extent of the large depositional area along the eastern end of the South Beach area, however, appears to be relatively stable. The recent beach monitoring data suggests that the erosional area to the west is only marginally benefiting from the large sand mass to the east and is continuing to erode at a rate similar to pre-1999 project conditions. Accordingly, because a dredge will be mobilized to the Barrett Shoals borrow area during the 2005/06 project, it will be most economical to place any required sand volume along the South Beach shoreline at that time. This will avoid a costly mobilization if the continued sand losses eventually threaten upland development prior to future comprehensive restoration projects at the island.

### **2.3 South Island Shoreline**

The South Island shoreline includes the beach monitoring stations 04 through 11. This reach of Atlantic shorefront has been net stable to accretional over the 18-year period for which comprehensive beach monitoring data are available (ref: numerous past beach monitoring reports by Olsen Associates, Inc.).

Since the completion of the 1997 project in October of that year, there has been a modest trend of volumetric gain along most of this shoreline. The majority of those gains, however, have been along the lower portions of the beach profile. Nonetheless, this has contributed to a general increase in the total sediment volume along the shoreline reach.



**Figure 2:** Location of the +5.0 NGVD contour along the Hilton Head Island South Beach shoreline for noted dates.

Computed beach volume changes for the South Island shoreline are summarized in **Table 2**. In all, the South Island beach gained more than 348,000 cubic yards of sand between October 1997 and May 2004. Gains were realized at 7 of the 8 beach monitoring stations along this reach of shoreline. The beach at station 5 was essentially net stable over the six and one-half year period with a computed sand loss of only 1,700 cubic yards. The stable to accretional trend experienced along the South Island shoreline between October 1997 and May 2004 is considered the result of the indirect feeding benefits to that area from sand placed along the more northern shorelines during the 1990 and 1997 nourishment projects. This trend is expected to continue with the Town's commitment to long-term maintenance through nourishment of the shorelines to the north.

Although South Island dry beach widths, relative to upland development, are some the narrowest along the entire island, the long-term documented stability and recent trend of accretion of the beach does not warrant the need for large scale sand nourishment of that shoreline at this time. Should continued monitoring document future changes that would indicate a trend of erosion sand nourishment should be considered.

**Table 2:** Beach volume change summary for the South Island shoreline between October 1997 and May 2004.

Monument	Shoreline Reach (feet)	Volume Change Above Noted Elevation (cy)					
		+5'	+3.3'	0'	-3.3'	-5'	-10'
South Island Shoreline							
HI04	3,080	6,500	8,900	9,500	21,600	28,500	43,900
HI05	2,820	-600	-4,400	-17,000	-16,000	-14,600	-1,700
HI06	2,850	4,800	6,300	300	6,600	11,700	23,800
HI07	2,640	10,800	18,600	28,200	39,200	49,800	81,000
HI08	2,020	6,800	11,200	16,400	23,700	30,500	58,900
HI09	1,940	2,300	1,400	2,800	-2,400	4,900	30,900
HI10	2,050	8,100	14,400	25,300	25,600	36,700	66,800
HI11	2,420	10,100	9,500	13,600	16,500	25,200	45,000
Total	19,820	48,800	65,900	79,100	114,800	172,700	348,600

## 2.4 Central Island Shoreline

The Central Island area is defined as the shoreline between Alder Lane in South Forest Beach (beach monitoring station 11) and The Folly (just north of station 24). This shoreline includes portions of South Forest Beach, Coligny Public Beach Area, North Forest Beach, Shipyard Plantation, and Palmetto Dunes. Both the 1990 restoration project and the 1997 renourishment project included the placement of sand along this entire reach of shoreline. The 1990 and 1997 projects included the placement of approximately 1,700,000 and 2,590,000 cubic yards of sand, respectively.

**Table 3** summarizes the total volume change between October 1997 and May 2004 for the Central Island shoreline. As of May 2004, approximately 798,000 cubic yards of sand have been displaced from within the 1997 project limits. Considering this sand loss from the project area, approximately 69 percent of the sand volume placed in 1997 remains within the project limits along the Central Island shoreline.

**Table 3:** Beach volume change summary for the Central Island shoreline between October 1997 and May 2004.

Monument	Shoreline Reach (feet)	Volume Change Above Noted Elevation (cy)						Sand Volume Placed in 1997 (cy)	Percent Remaining (May 2004)
		+5'	+3.3'	0'	-3.3'	-5'	-10'		
Central Island Shoreline									
HI12	1,820	-16,400	-18,900	-21,200	-22,900	-16,000	3,600	86,600	104.2%
HI13	2,300	-25,400	-34,100	-54,700	-60,800	-54,300	-25,000	167,200	85.0%
HI14	2,110	-36,900	-54,400	-93,300	-108,500	-107,900	-93,600	212,100	55.9%
HI15	2,410	-34,600	-49,200	-88,400	-112,400	-115,900	-107,900	271,000	60.2%
HI16	1,870	-22,800	-31,200	-55,700	-74,300	-80,700	-127,700	279,500	54.3%
HI17	1,150	-10,800	-15,200	-26,500	-34,400	-33,700	-21,600	122,400	82.4%
HI18	1,920	-16,700	-23,700	-40,200	-53,800	-54,800	-51,600	218,600	76.4%
HI19	2,540	-17,800	-26,700	-48,700	-60,100	-60,000	-57,000	265,800	78.6%
H19A	1,870	-23,600	-35,600	-66,400	-84,800	-88,500	-83,900	186,600	55.0%
HI20	1,530	-18,700	-29,100	-51,300	-67,800	-72,200	-74,000	158,400	53.3%
HI21	2,260	-19,300	-30,700	-52,600	-62,200	-61,300	-47,600	207,600	77.1%
HI22	2,160	-7,100	-15,800	-30,000	-36,000	-34,800	-21,900	169,300	87.1%
HI23	1,870	-21,600	-33,800	-55,500	-67,100	-70,100	-71,400	161,900	55.9%
HI24	1,740	-15,300	-23,900	-44,000	-44,900	-39,100	-18,200	83,200	78.1%
Total	27,550	-287,000	-422,300	-728,500	-890,000	-889,300	-797,800	2,590,200	69.2%

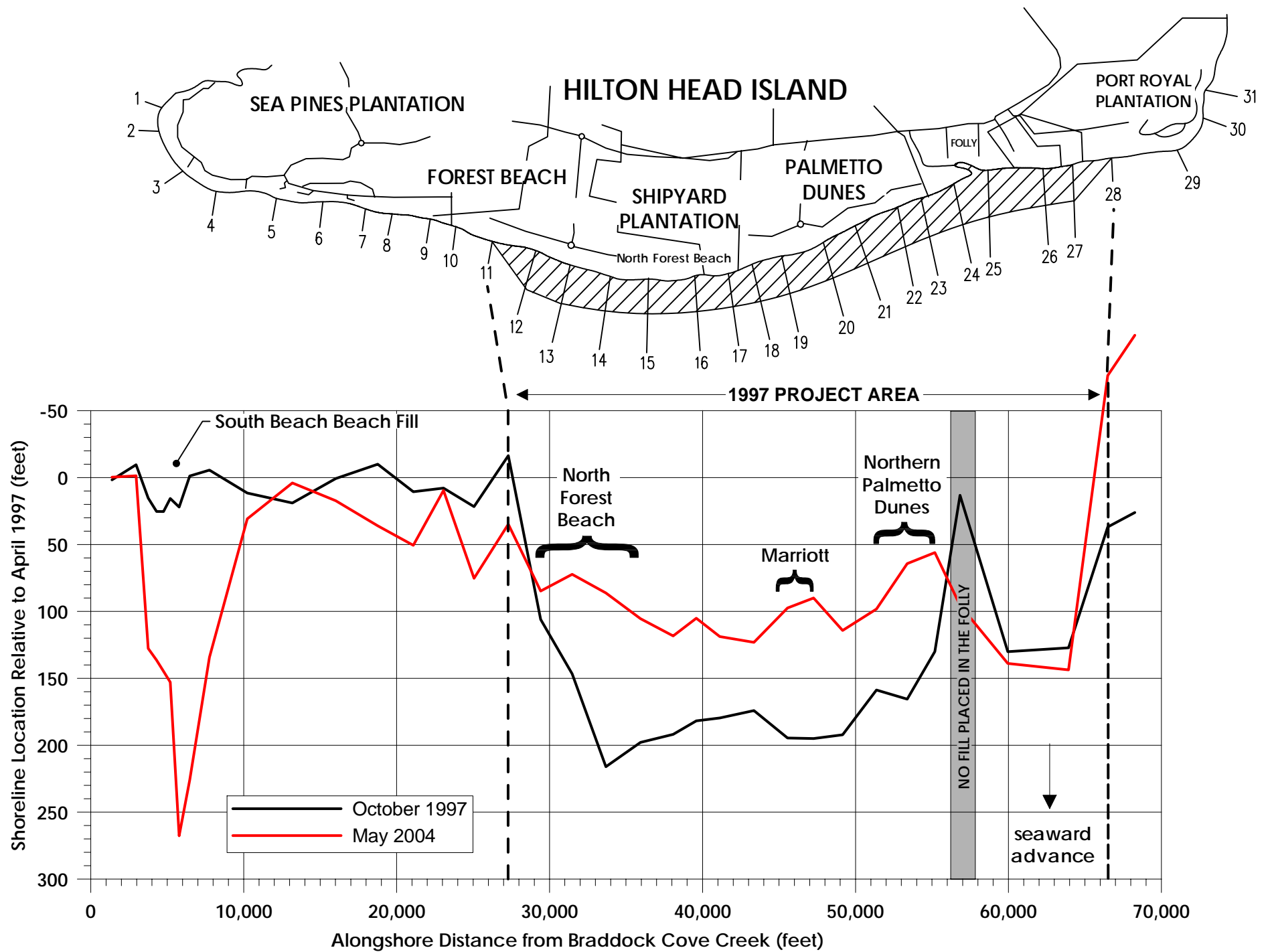
Similar to the historical trend, beach volume change along the central island has been highly variable since completion of the 1997 project. The variability in volume change is evident through computation of the percent volume remaining for the 1997 project at each beach monitoring station. The results of this computation for the Central Island shoreline are also summarized in **Table 3**. The three areas that have experienced the largest sand losses include North Forest Beach (stations 14, 15, and 16), the central portion of Palmetto Dunes at the Marriot (i.e., old Hyatt) (stations 19A and 20), and a stretch of shoreline in northern Palmetto Dunes (station 23). All three of these areas have historically been the most erosional along the Central Island shoreline. These areas are also identified through comparison of the dry berm width in May 2004 relative to 1997 project conditions. The berm locations and areas of noted recession in the project area are depicted in **Figure 3**.

Based upon post-1997 beach change rates and the May 2004 conditions, about half of the Central Island shoreline currently requires sand renourishment. Again, it is the objective of the Town's beach management program to maintain continuous healthy beach conditions and renourish prior to complete loss of previously placed sand volumes. Although portions of the central island have a significant portion of the material placed in 1997 remaining, it is most economical to renourishment the entire project reach in a continuous manner. Accordingly, it is recommended that the entire Central Island be renourished as part of the 2005/06 project.

## **2.5 North Island Shoreline**

The North Island shoreline is located between the Folly and the "Heel" of the island. This is the northernmost section of Atlantic shoreline along the island. A portion of this shoreline reach, generally between beach monitoring stations 25 and 27, was originally restored in 1990 and renourished in 1997. As part of the 1997 project, about 510,000 cubic yards of sand were placed along about 10,000 feet of the North Island shoreline. The northern terminal end of that fill was located at station 28.





**Figure 3:** Location of edge of "dry berm" relative to April 1997 (Pre-project) conditions.

Between October 1997 and May 2004, the North Island's project area shoreline, represented by stations 26 and 27, experienced a net loss of only 13,800 cubic yards, or just 2.7 percent of the volume placed during the 1997 project. Outside of the project limits, the section of shoreline represented by station 25 gained almost 31,000 cubic yards while the area to the north of the 1997 beach fill lost more than 228,000 cubic yards. The losses along the latter reach of shoreline are evidence of a recent trend of erosion along the "Heel" of the island. **Figure 4** also demonstrates the relative stability of the North Island Shoreline "project area" and the location of recent shoreline retreat at stations 28 and 29. The recent trend of erosion is related to continued changes of Joiner Bank just offshore of the north end of the island. Because of the significant distance between the edge of beach and the upland development at stations 28 and 29, the observed recession at those locations, does not warrant immediate renourishment. As recommended for other areas that currently do not require nourishment, this area should be continually monitored for future beach changes and the potential future need for sand replenishment.

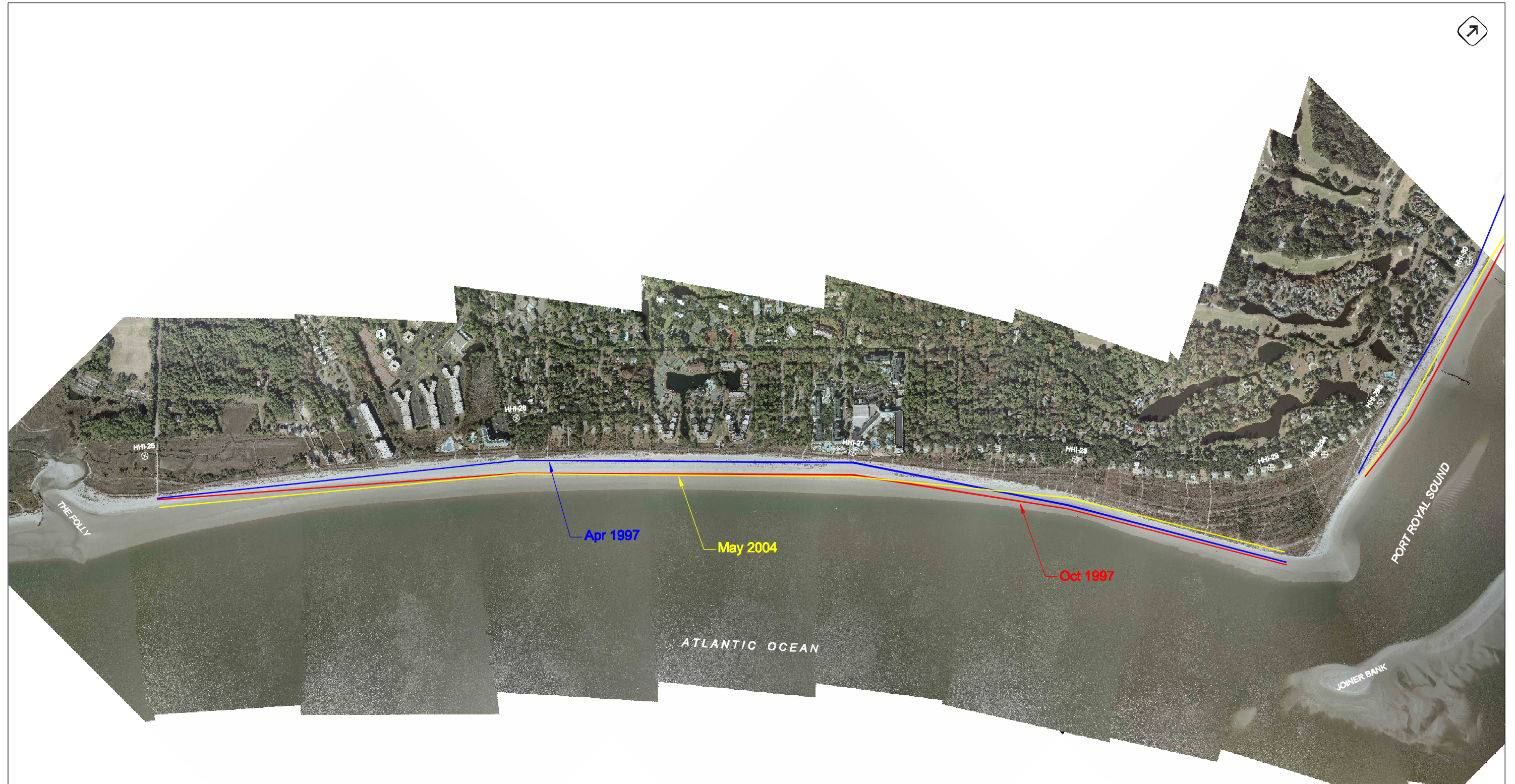
**Table 4:** Beach volume change summary for the North Island shoreline between October 1997 and May 2004.

Monument	Shoreline Reach (feet)	Volume Change Above Noted Elevation (cy)						Sand Volume Placed in 1997 (cy)	Percent Remaining (May 2004)
		+5'	+3.3'	0'	-3.3'	-5'	-10'		
North Island Shoreline									
HI25	1,550	15,800	23,400	40,400	39,800	37,200	30,800	0	-
HI26	4,700	11,000	12,700	5,500	-9,400	-15,700	-25,200	295,300	91.5%
HI27	3,240	7,100	8,400	4,900	2,600	2,900	11,400	215,000	105.3%
HI28	1,890	-10,500	-24,700	-53,600	-79,100	-91,200	-114,000	0	-
HI29	1,640	-9,300	-24,000	-63,200	-106,300	-121,400	-131,300	0	-
Total	13,020	14,100	-4,200	-66,000	-152,400	-188,200	-228,300	510,300	97.3%

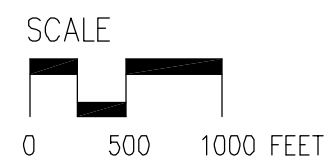
## 2.6 Port Royal Plantation Port Royal Sound Shoreline

The Port Royal Sound shoreline discussed herein includes only that reach of shoreline along Port Royal Plantation between the "Heel" of the island and Fish Haul Creek. This reach of shoreline was restored as part of the 1997 Town of Hilton Head Island Beach project.





Date of Photography: December 20, 2003



**Figure 4:** Historical location of the +5 ft NGVD contour along the Hilton Head Island Atlantic Ocean shoreline between The Folly and Port Royal Sound (North Beach).

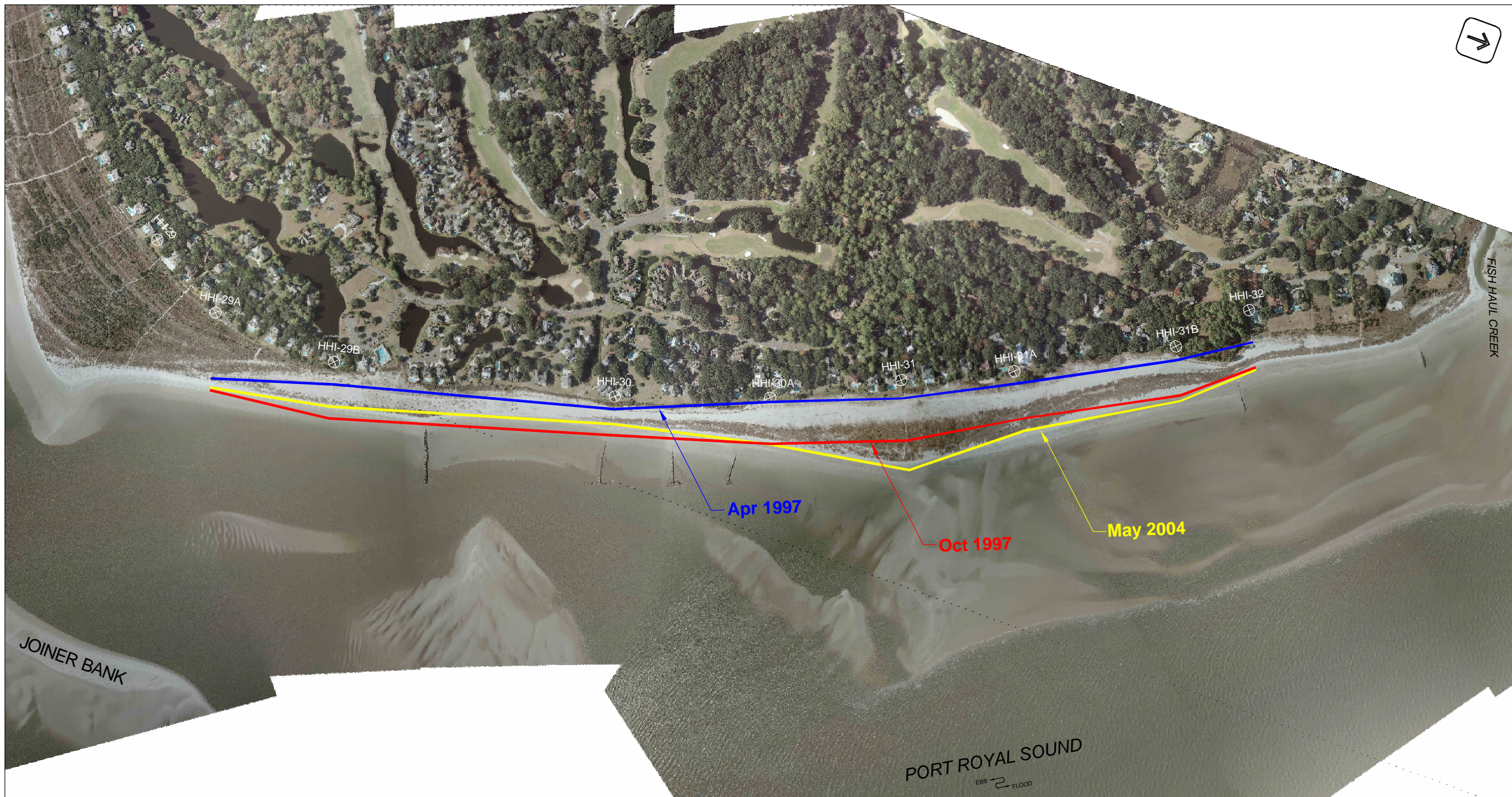
Overall, during the six and one-half years since the October 1997 completion of the Port Royal Sound shoreline restoration, the area has lost approximately 55,600 cubic yards of sand. The only measured volume gain occurred at stations 31 and 31A, where approximately 83,400 cubic yards have accreted. South and north of this accretional area, the shorelines have lost approximately 114,200 and 24,800 cubic yards of sand, respectively, since project completion. A portion of this material volume most likely contributed to the accretion at stations 31 and 31A. Despite the erosion, the dry beach continues to be significantly wider than pre-1997 project conditions along the entire Port Royal project shoreline by an average of more than 210 feet. The location of the existing (May 2004) shoreline relative to pre- and post-1997 project conditions is depicted in **Figure 5**.

Considering the beach performance at this location since the completion of the 1997 project as well as the current condition of the beach, there is not an immediate need for sand nourishment at this location. The shoreline should continue to be monitored as part of the Town's island-wide monitoring program to document future changes and determine when future renourishment may be warranted.

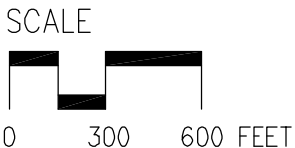
**Table 4:** Beach volume change summary for the North Island shoreline between October 1997 and May 2004.

Monument	Shoreline Reach (feet)	Volume Change Above Noted Elevation (cy)				
		+5'	+3.3'	0'	-3.3'	-5'
Port Royal Sound						
H29A	880	1,700	400	-2,300	-10,700	-17,500
H29B	1,240	-6,400	-12,200	-22,800	-39,800	-46,200
HI30	1,340	-9,900	-16,200	-28,700	-40,700	-46,000
H30A	880	2,900	2,500	-1,400	-5,500	-4,500
HI31	750	9,100	17,500	34,800	52,900	52,900
H31A	850	2,800	6,000	11,800	30,500	30,500
H31B	740	-5,500	-4,000	-1,300	-3,900	-500
HI32	1,320	-1,300	700	4,000	-23,800	-24,300
Total	8,000	-6,600	-5,300	-5,900	-41,000	-55,600





Date of Photography: December 20, 2003



**Figure 5:** Historical location of the +5 ft NGVD contour along the Hilton Head Island Port Royal Sound shoreline at Port Royal Plantation.



### 3. RECOMMENDATIONS

It is recommended that the Town of Hilton Head Island provide for beach fill along a section of the South Beach shoreline and all of the Central Island shoreline from Alder Lane to The Folly during the 2005/06 Hilton Head Island Beach Renourishment project. The project would include the placement of at least 100,000 cubic yards of clean sand along the South Beach shoreline and approximately 1,850,000 cubic yards of sand along the Central Island shoreline.

Based upon the performance of the 1997 project and the current condition of the North Island and Port Royal Plantation Port Royal Sound shorelines, renourishment of those areas is not expected to be warranted as part of the 2005/06 renourishment project. It is expected, however, that these areas may require renourishment in the next 3 to 5 years if current shoreline change rates and trends continue. Accordingly, it is recommended that these areas be closely monitored for variations to current shoreline change rates and trends. It is further recommended that the Town be prepared to potentially pursue a renourishment project along those areas in the noted time frame.

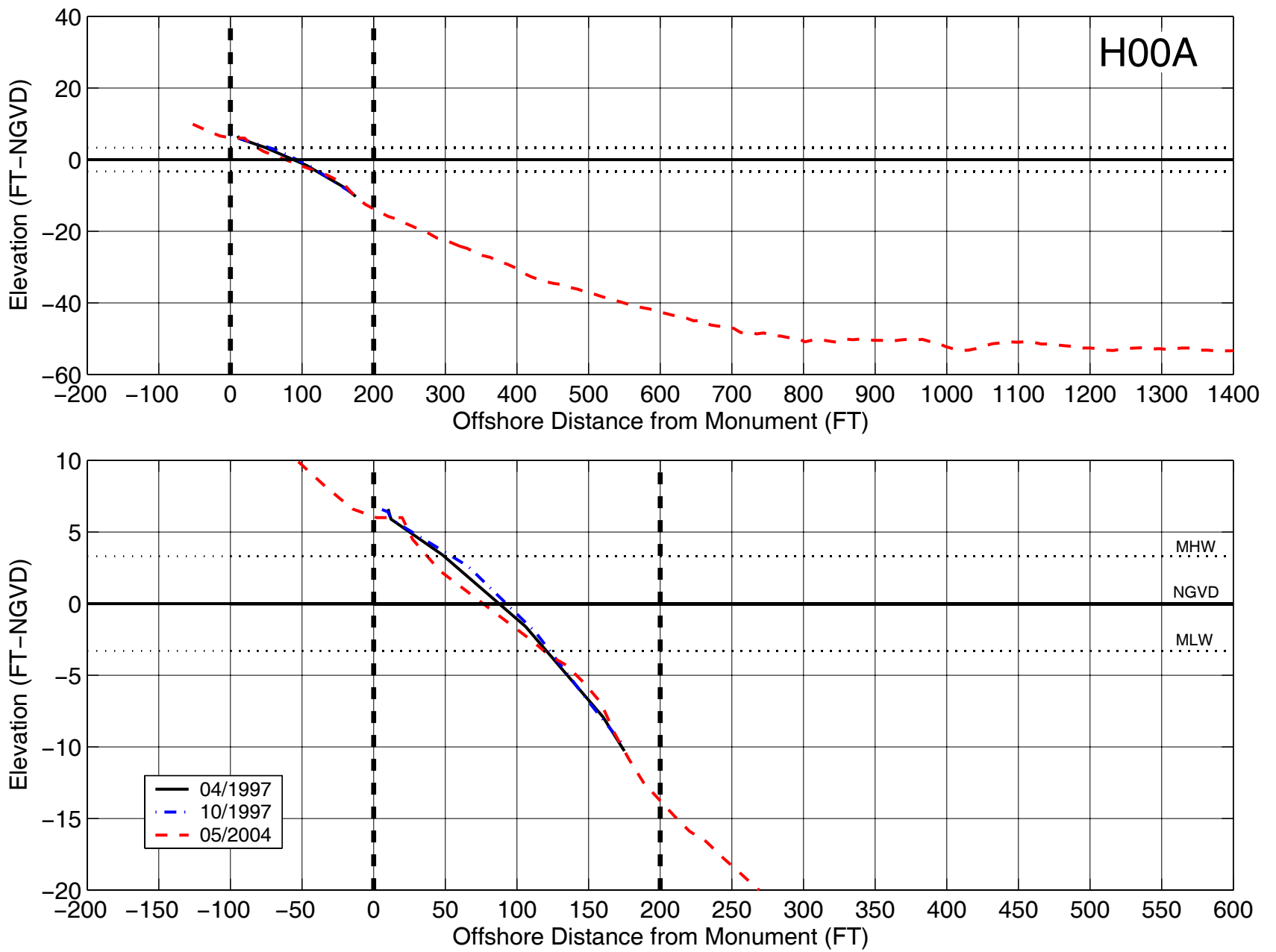
It recommended that semi-annual beach monitoring surveys and annual summary reports continue to be performed to document beach conditions and changes island-wide. Beach monitoring at Hilton Head Island has been, and will continue to be, a critical element of the comprehensive beach management program for the Town.

#### **4. REFERENCES**

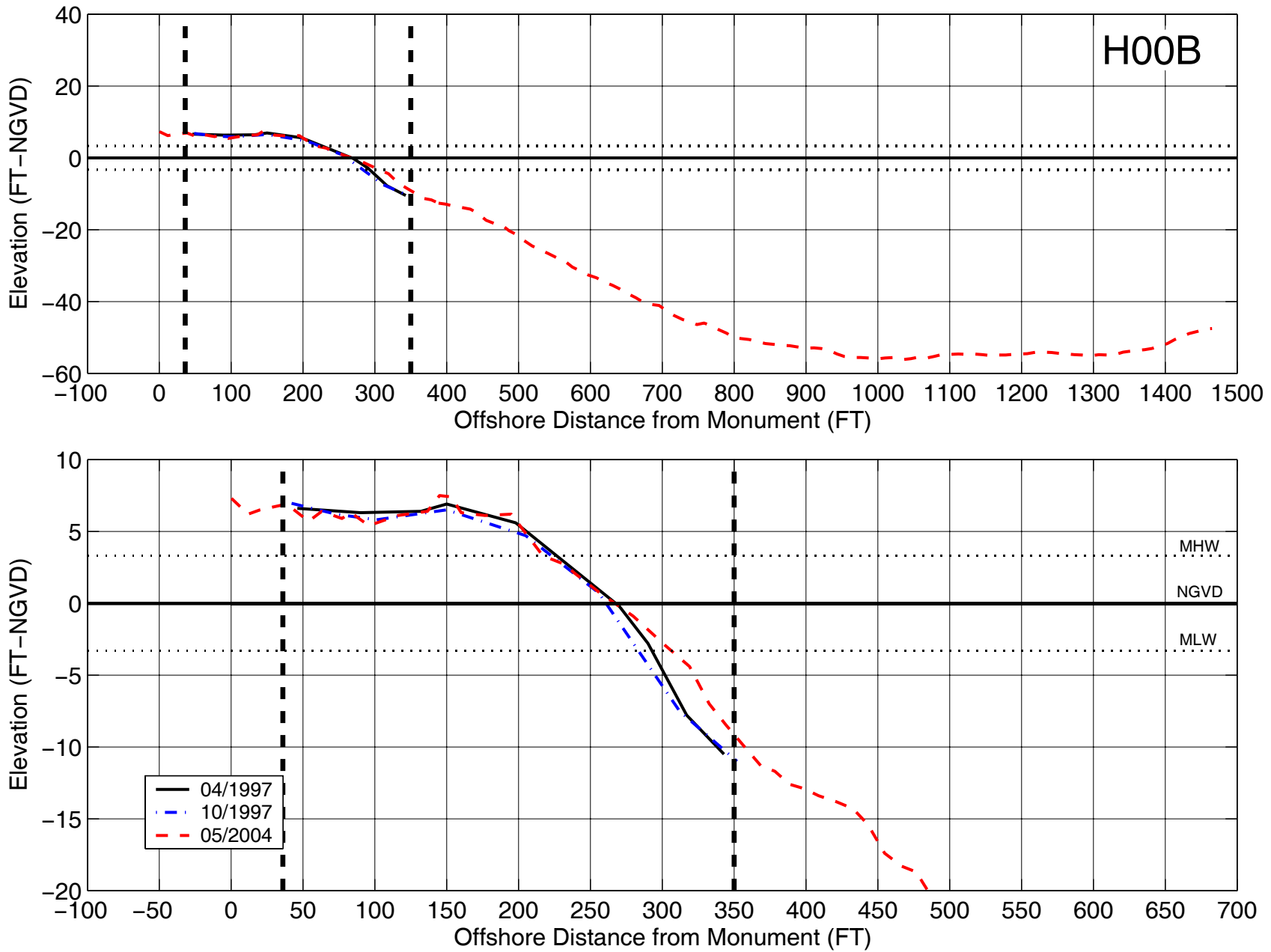
Olsen Associates, Inc. (1998). "South Beach Shoreline Erosion Study; Hilton Head Island, South Carolina," engineering report prepared for the Town of Hilton Head Island, SC, Olsen Associates, Inc., Jacksonville, FL. April, 1998.

APPENDIX A  
Beach Profile Data

**Figure A-01:** Measured beach profiles at station H00A, Hilton Head Island, SC.

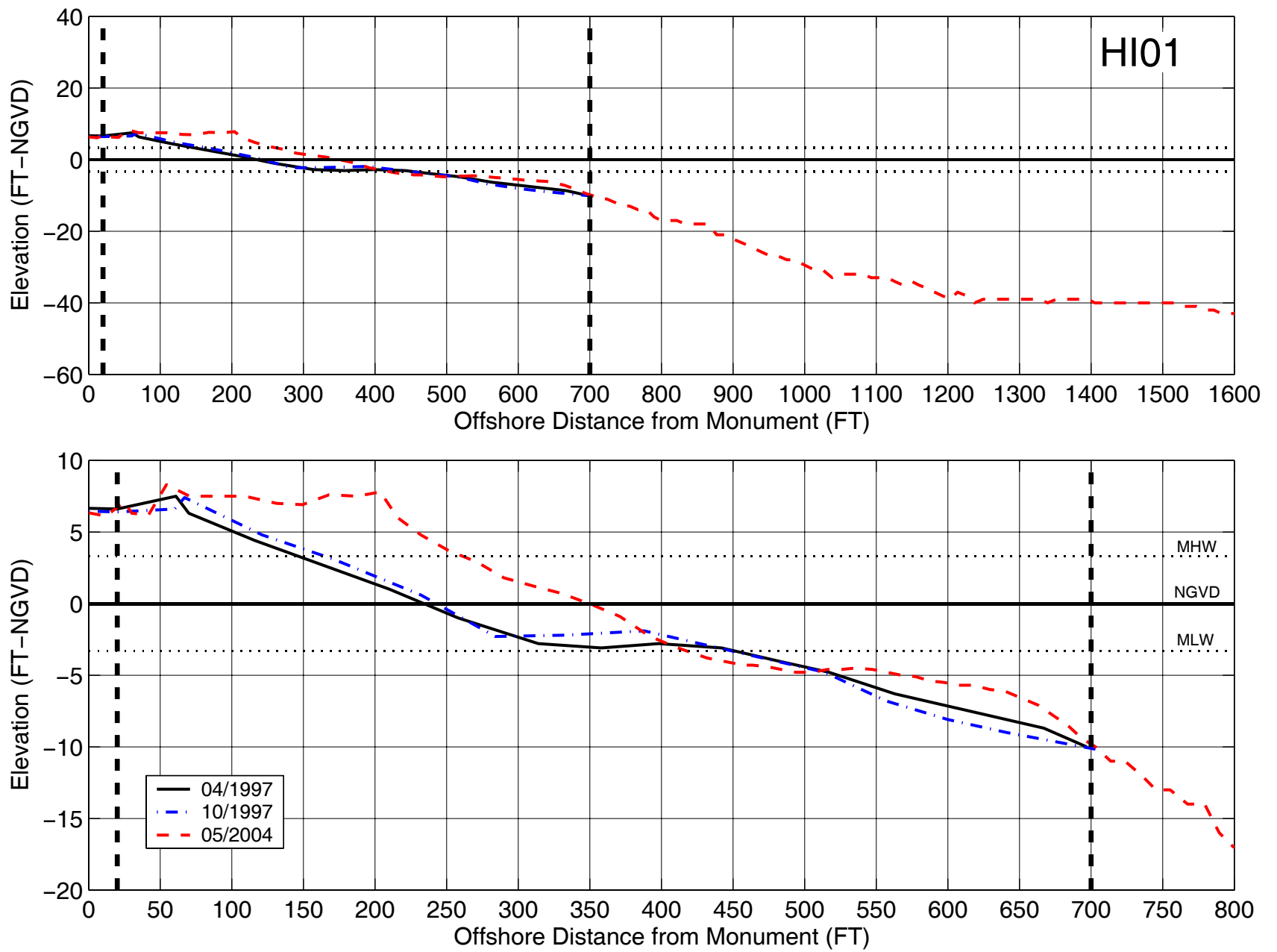


**Figure A-02:** Measured beach profiles at station H00B, Hilton Head Island, SC.

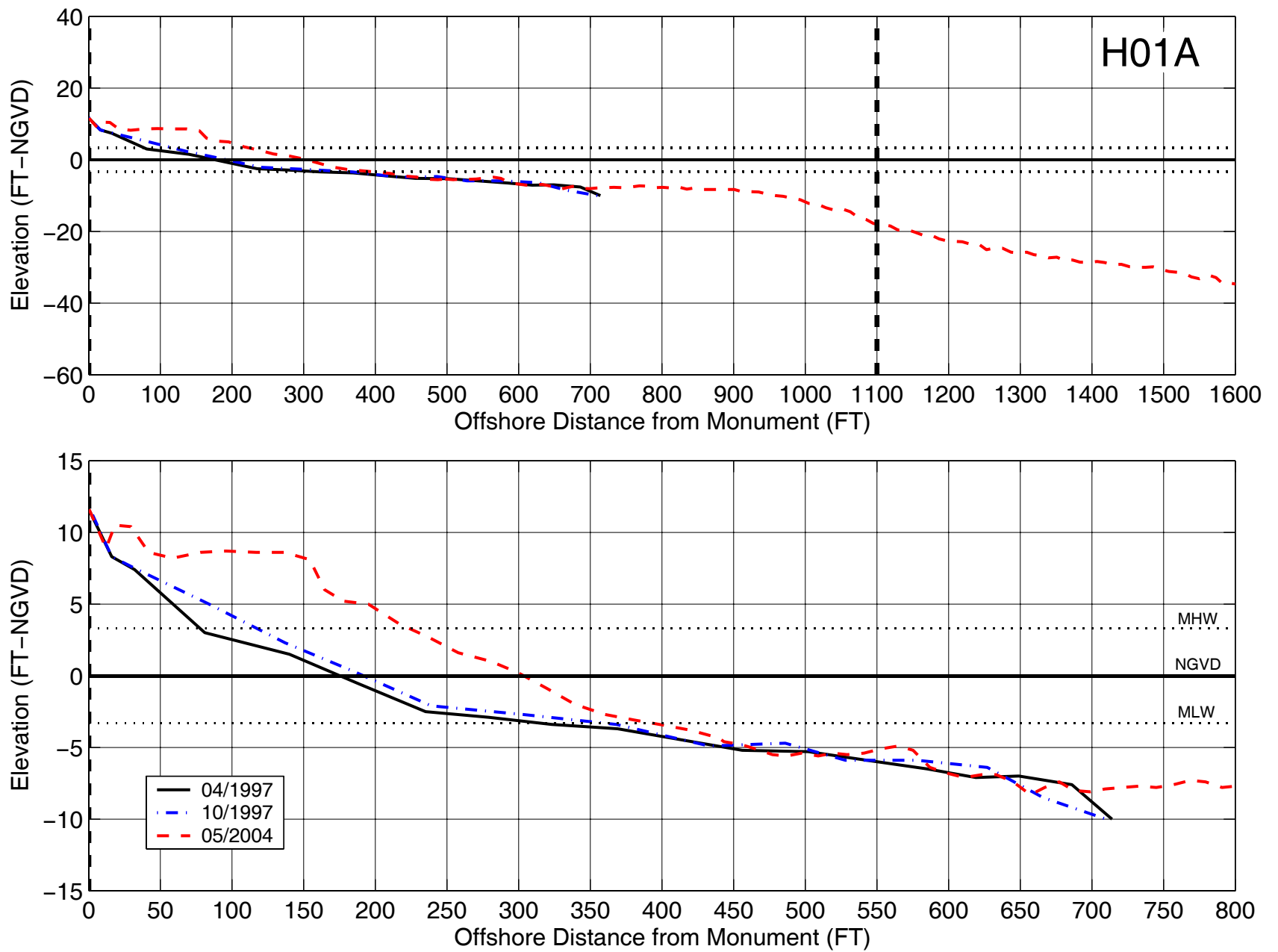




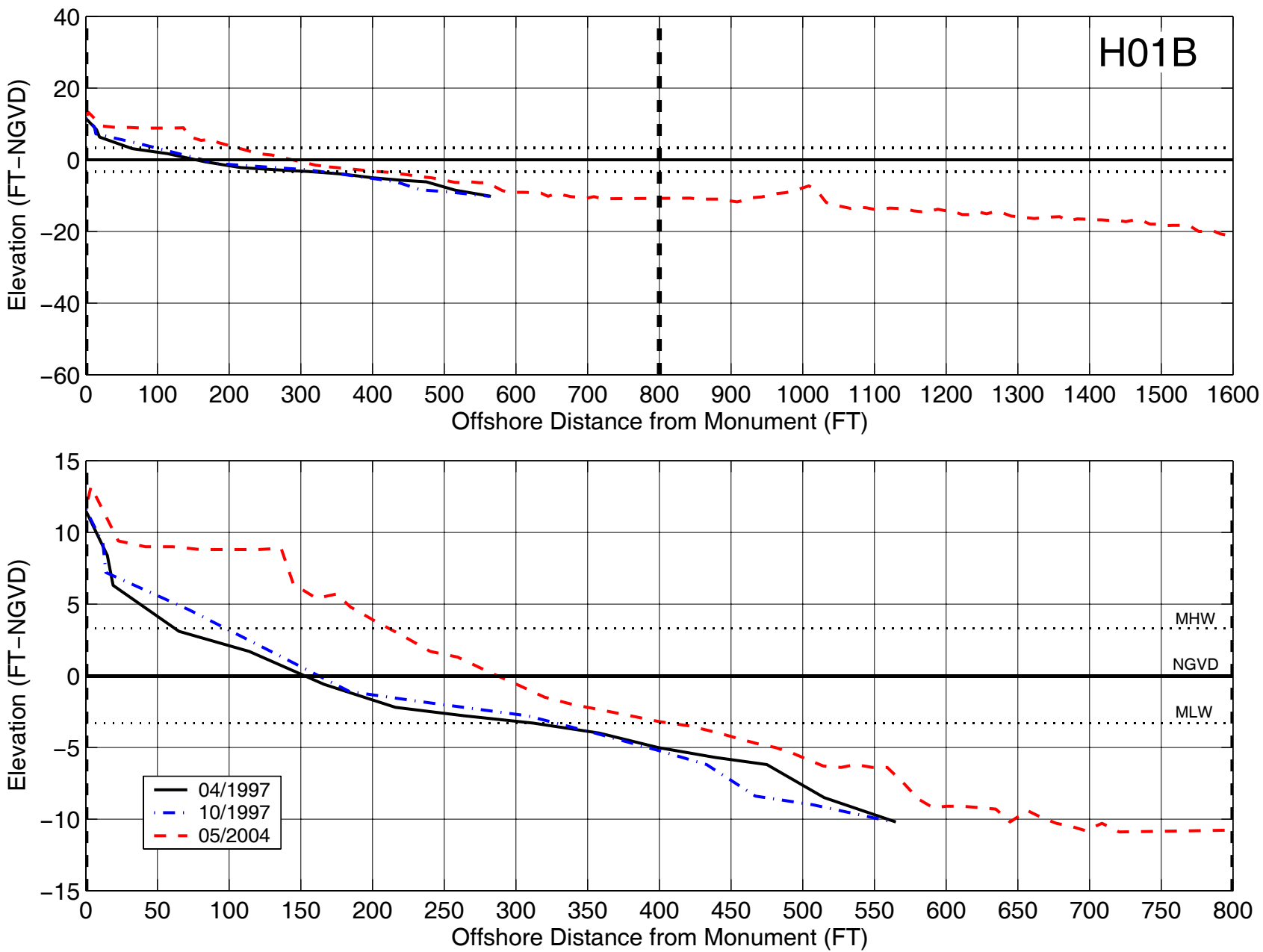
**Figure A-03:** Measured beach profiles at station HI01, Hilton Head Island, SC.

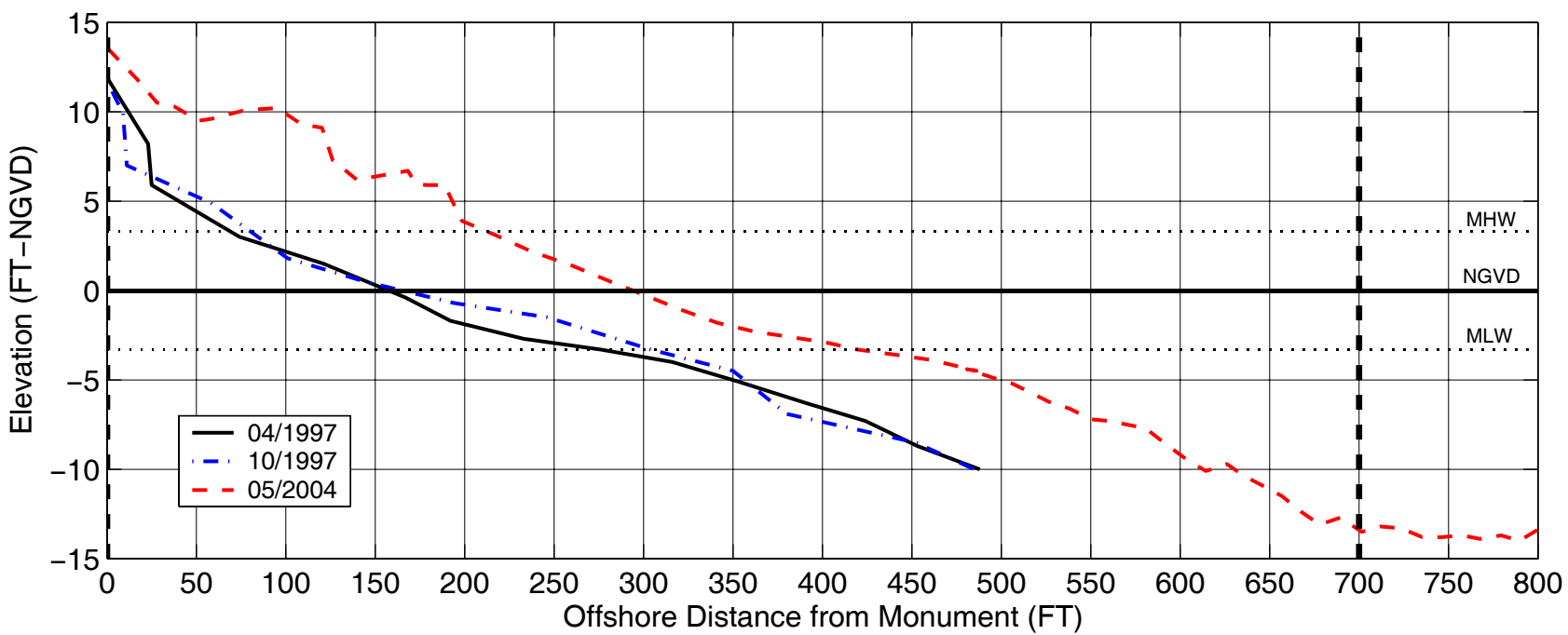
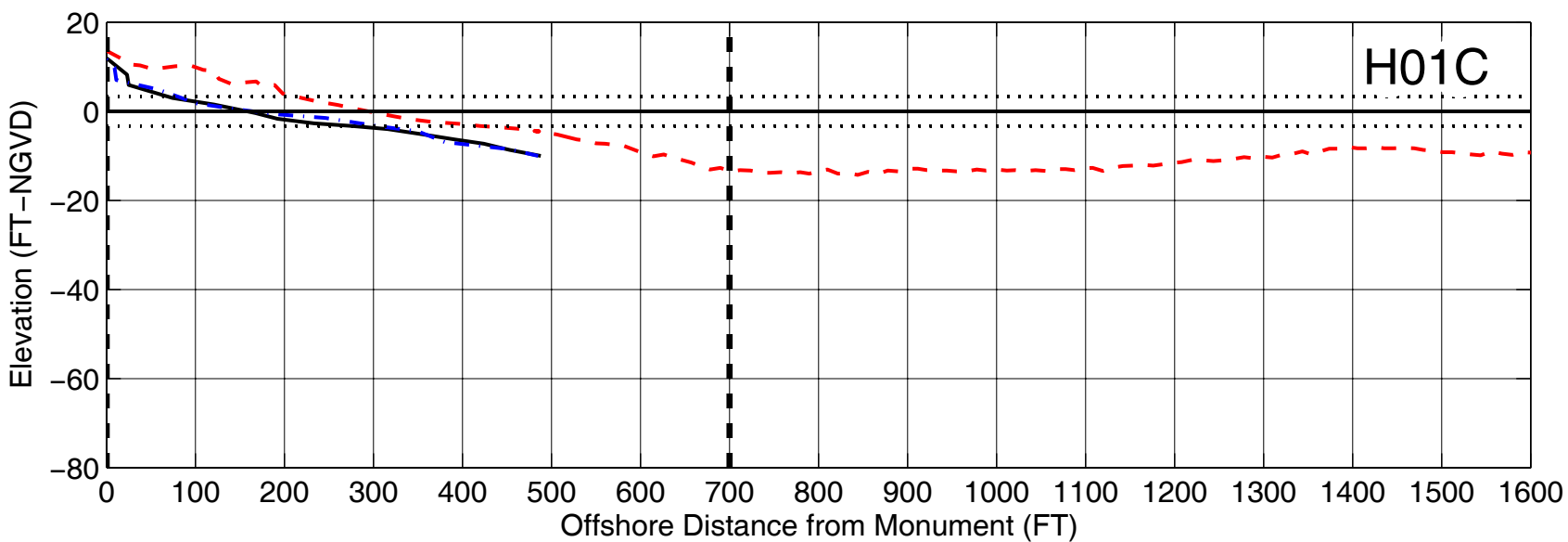


**Figure A-04:** Measured beach profiles at station H01A, Hilton Head Island, SC.



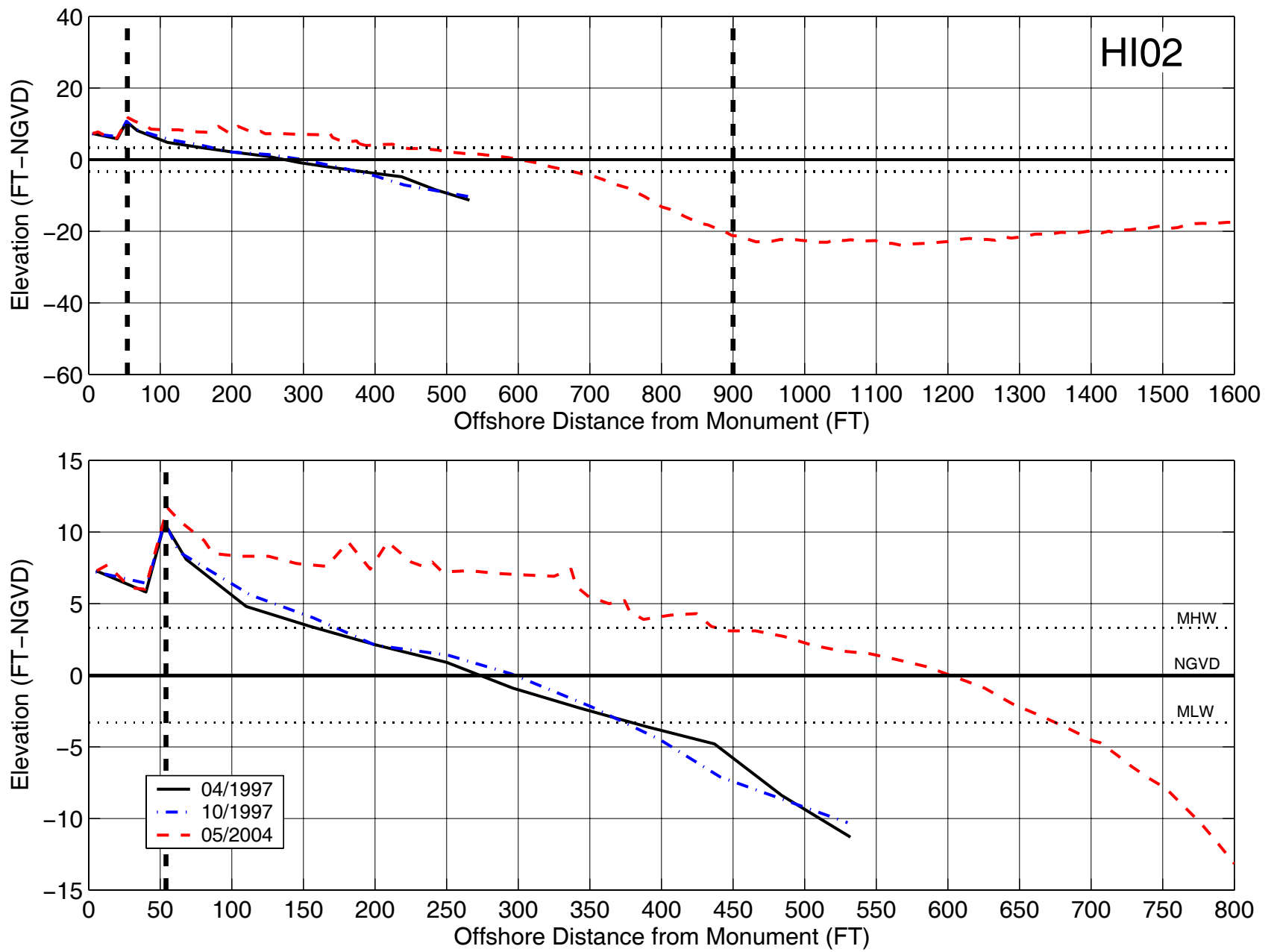
**Figure A-05:** Measured beach profiles at station H01B, Hilton Head Island, SC.



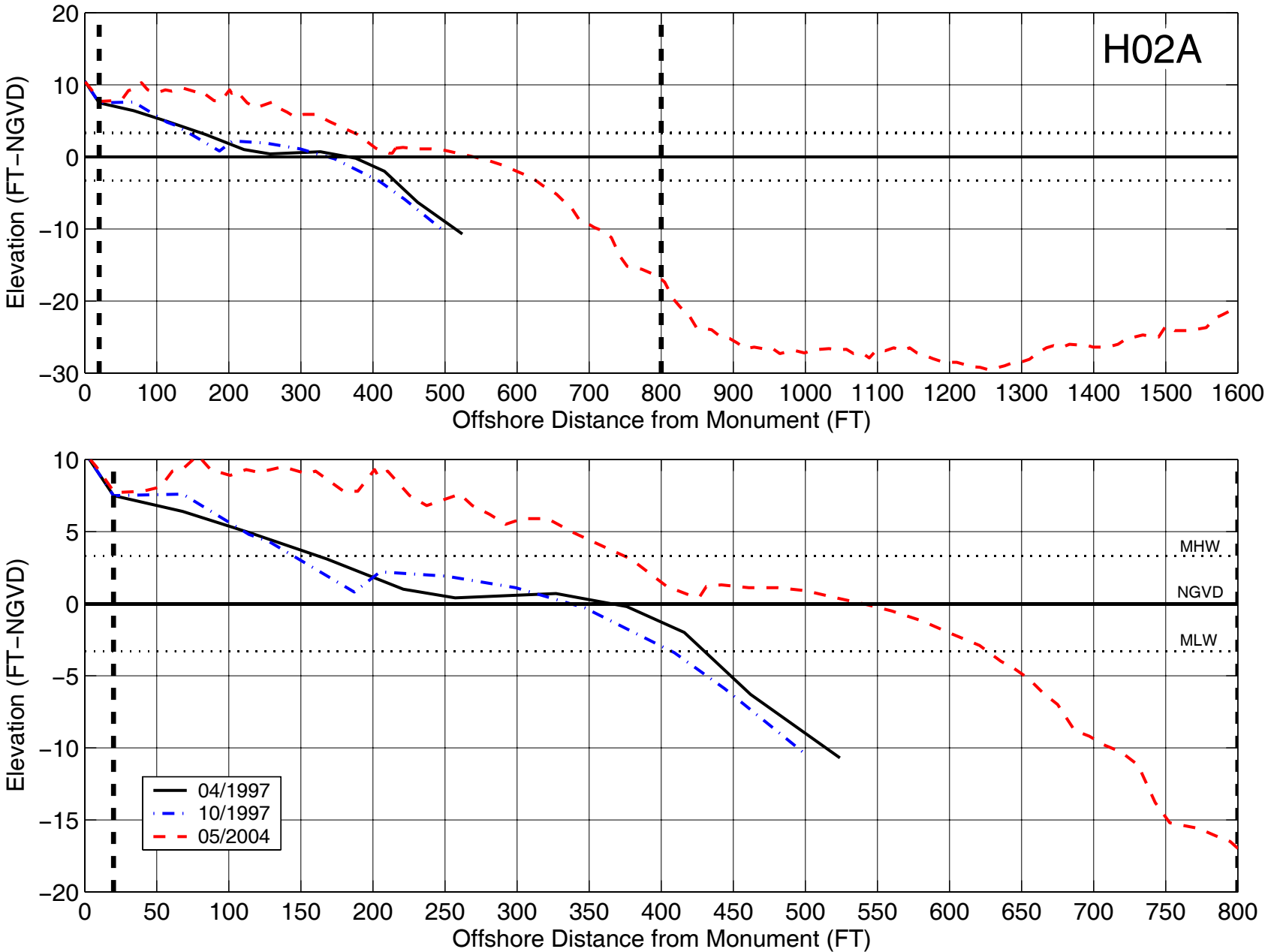


**Figure A-06:** Measured beach profiles at station H01C, Hilton Head Island, SC.

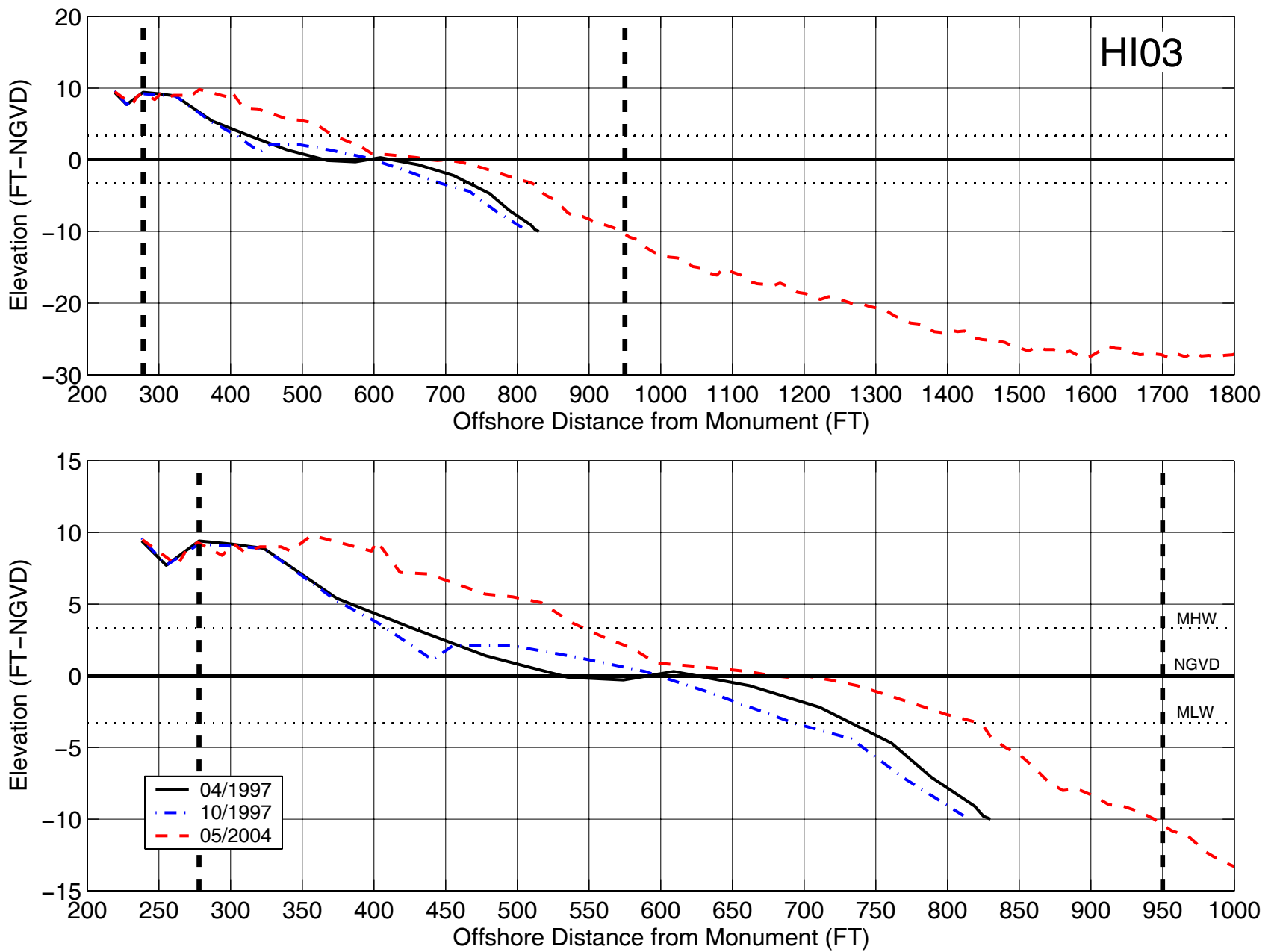
**Figure A-07:** Measured beach profiles at station HI02, Hilton Head Island, SC.



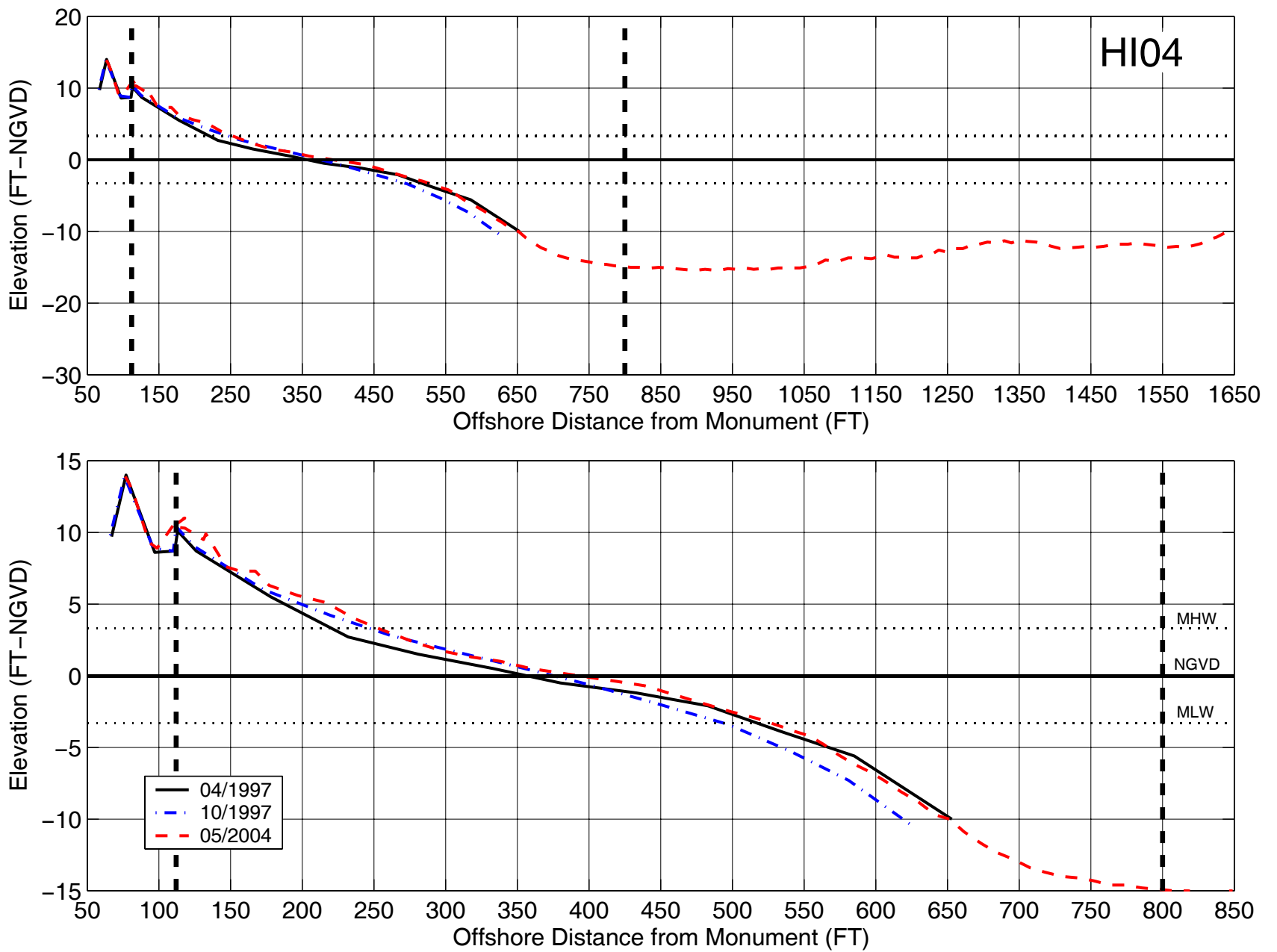
**Figure A-08:** Measured beach profiles at station H02A, Hilton Head Island, SC.



**Figure A-09:** Measured beach profiles at station HI03, Hilton Head Island, SC.

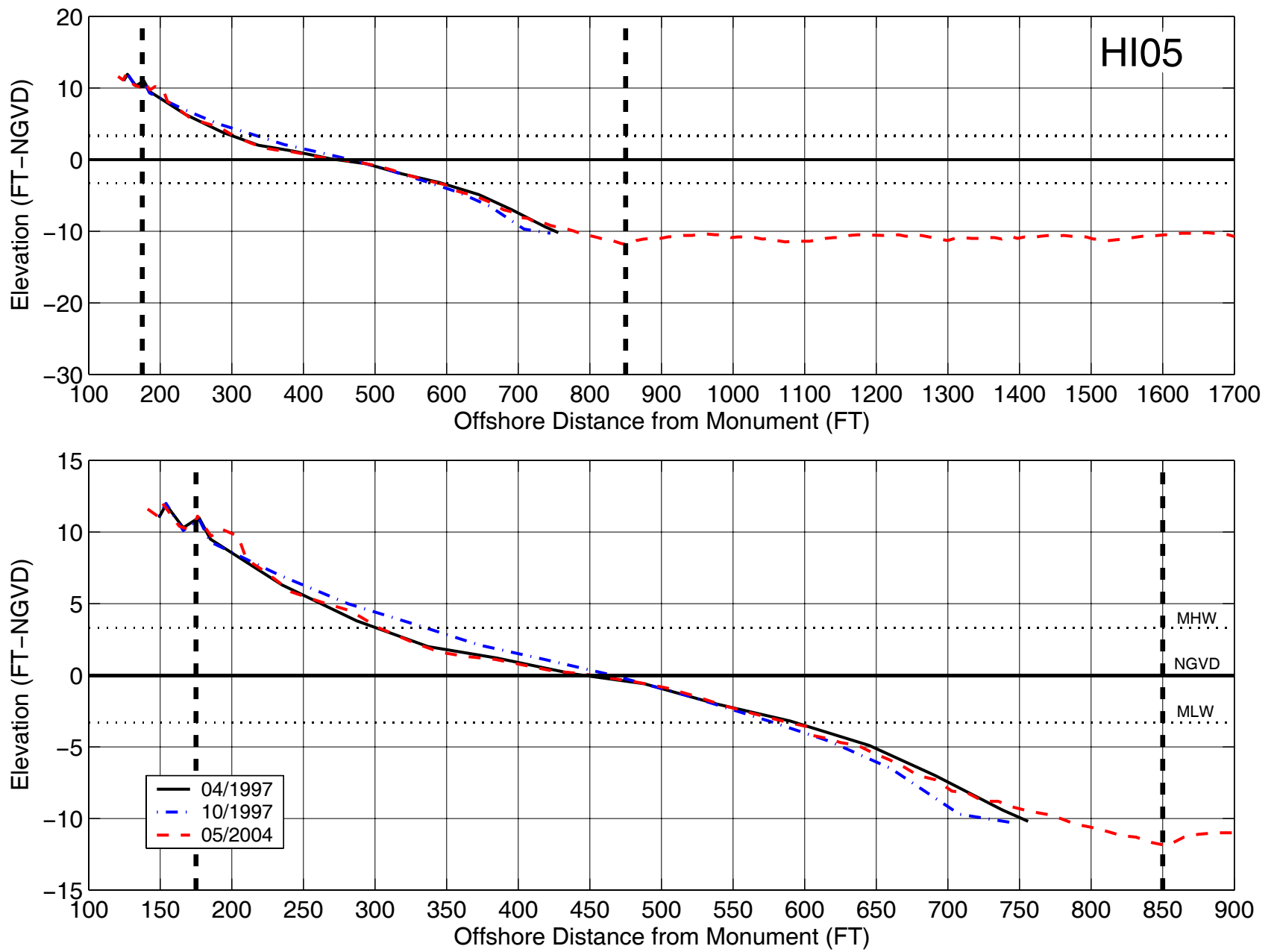


**Figure A-10:** Measured beach profiles at station HI04, Hilton Head Island, SC.

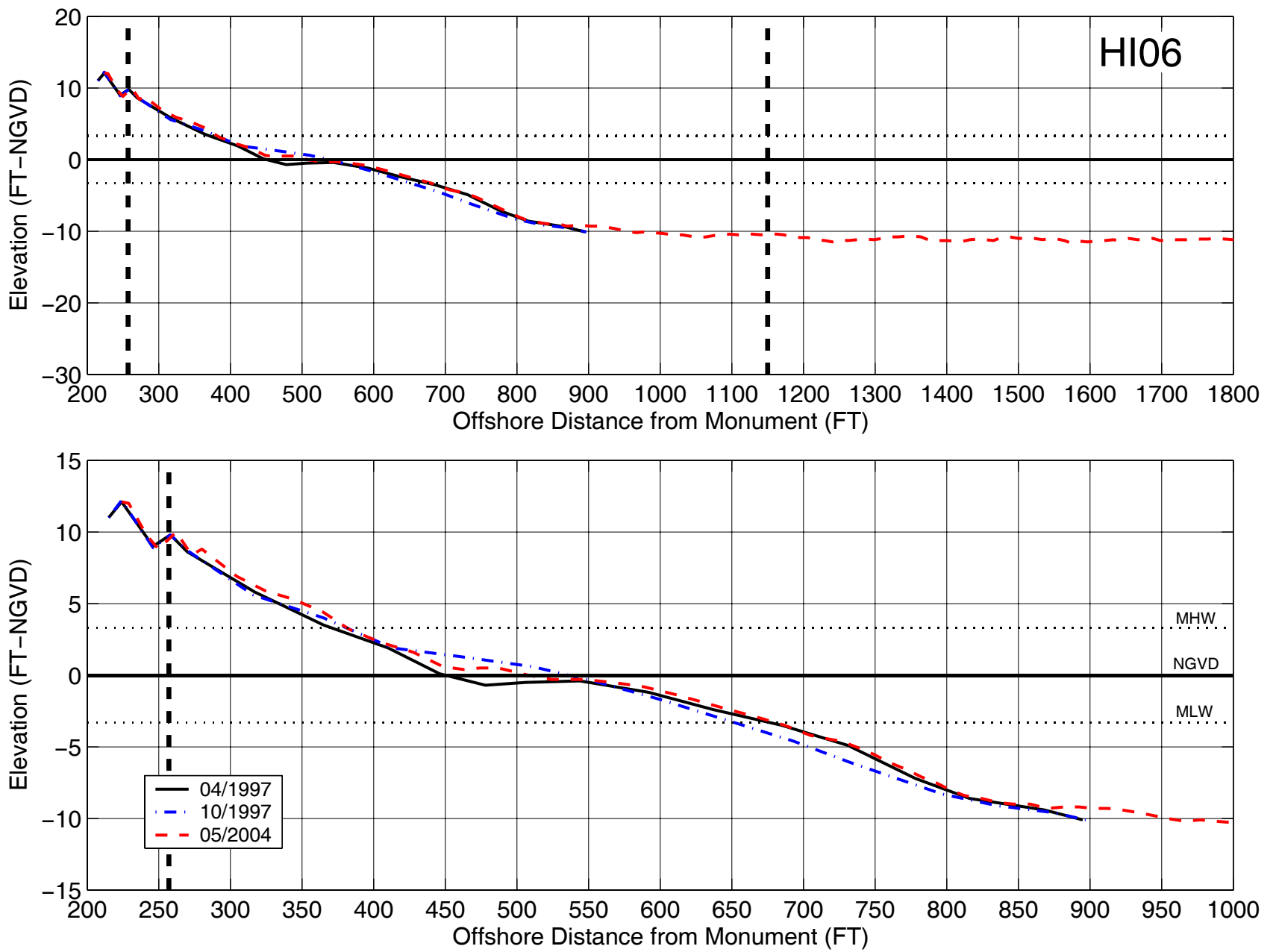




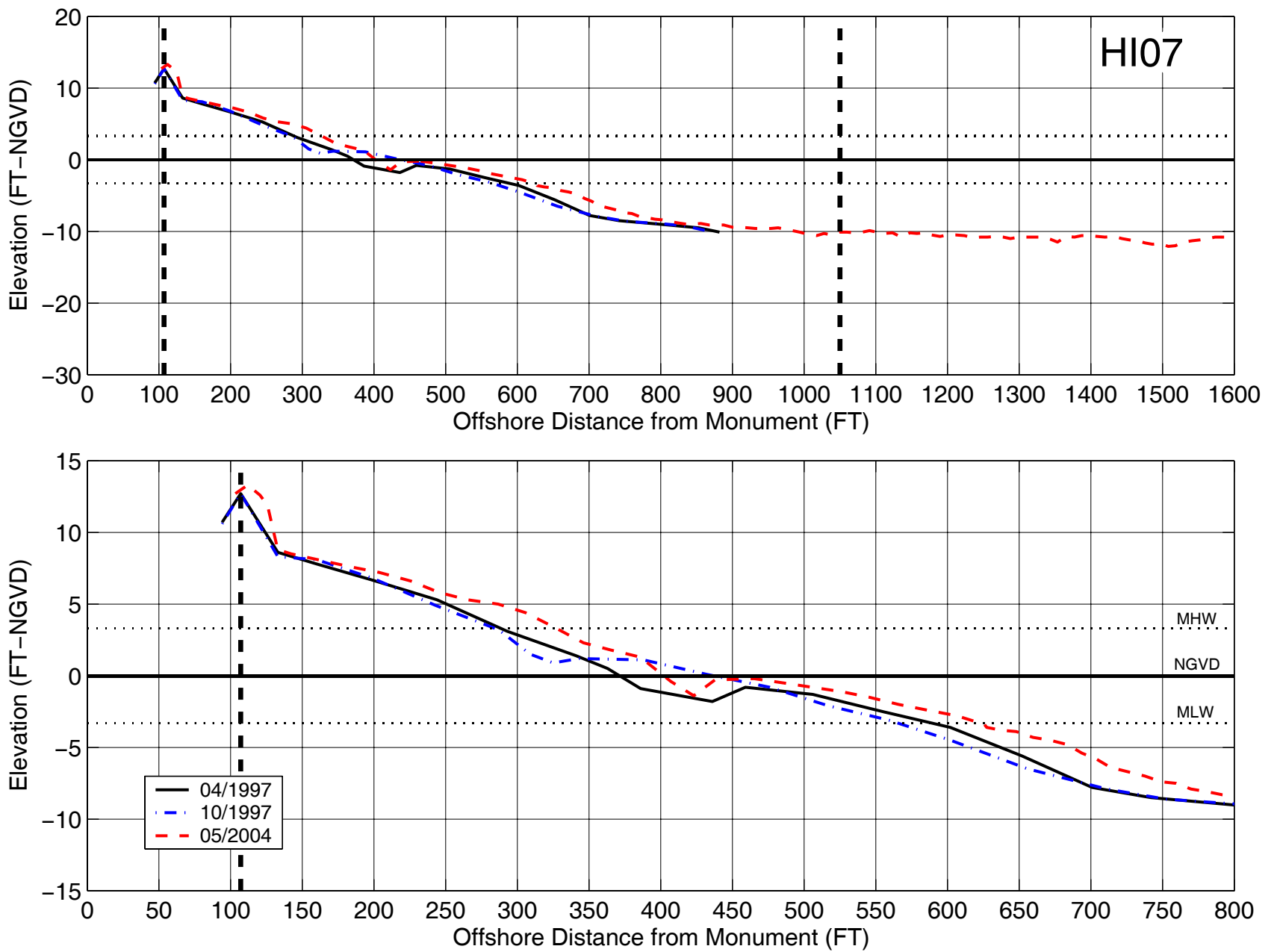
**Figure A-11:** Measured beach profiles at station HI05, Hilton Head Island, SC.



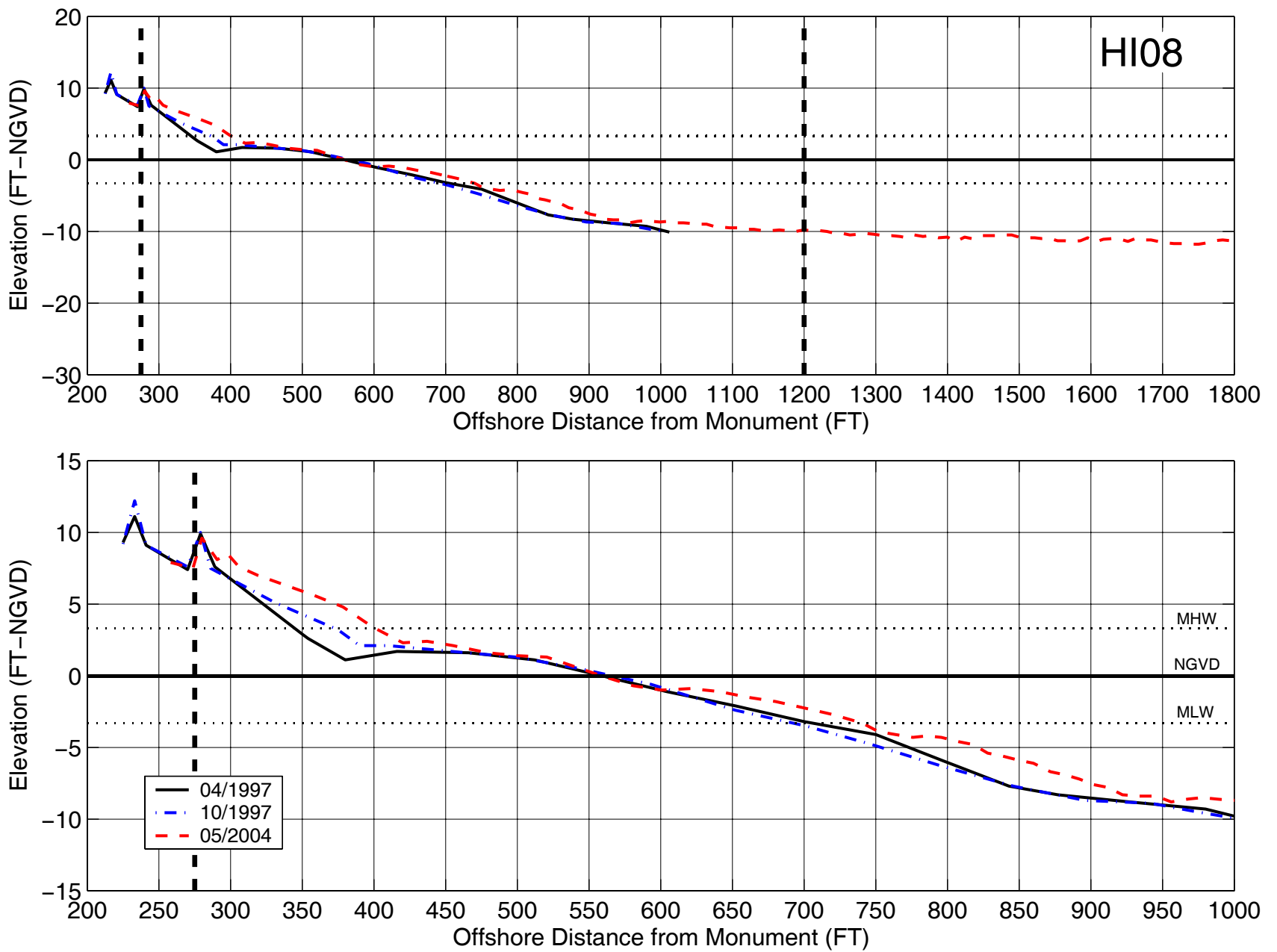
**Figure A-12:** Measured beach profiles at station HI06, Hilton Head Island, SC.



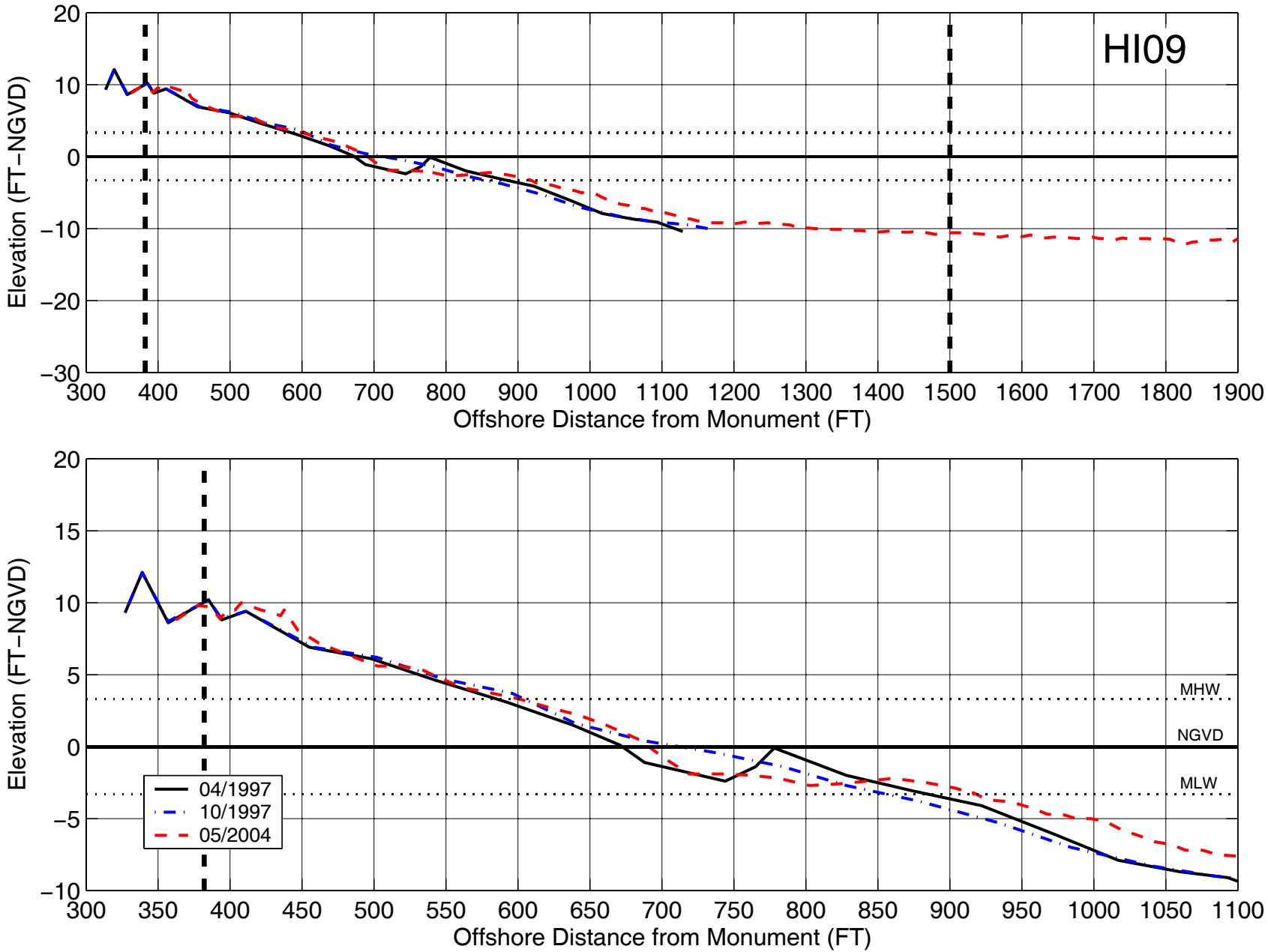
**Figure A-13:** Measured beach profiles at station HI07, Hilton Head Island, SC.



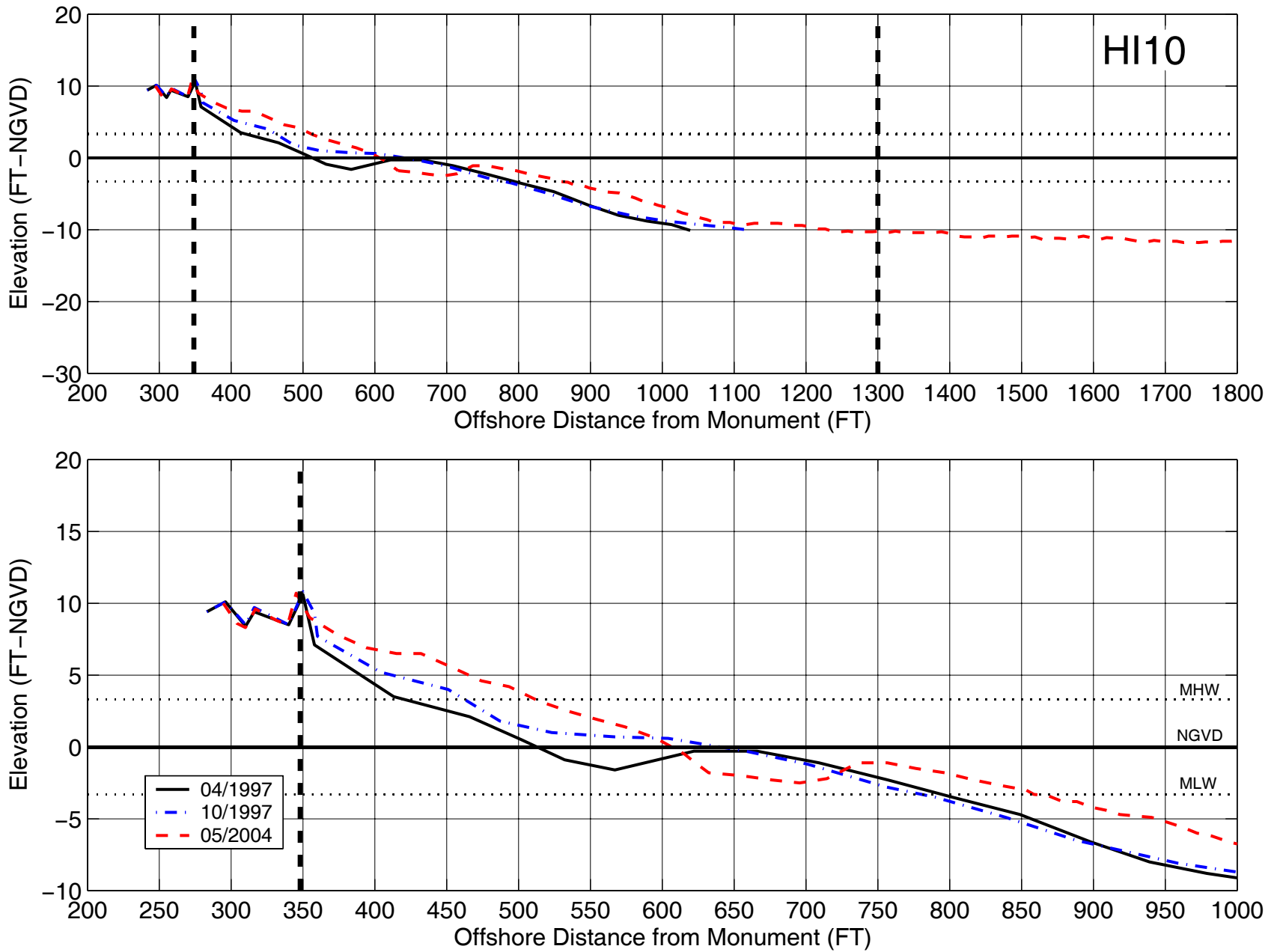
**Figure A-14:** Measured beach profiles at station HI08, Hilton Head Island, SC.



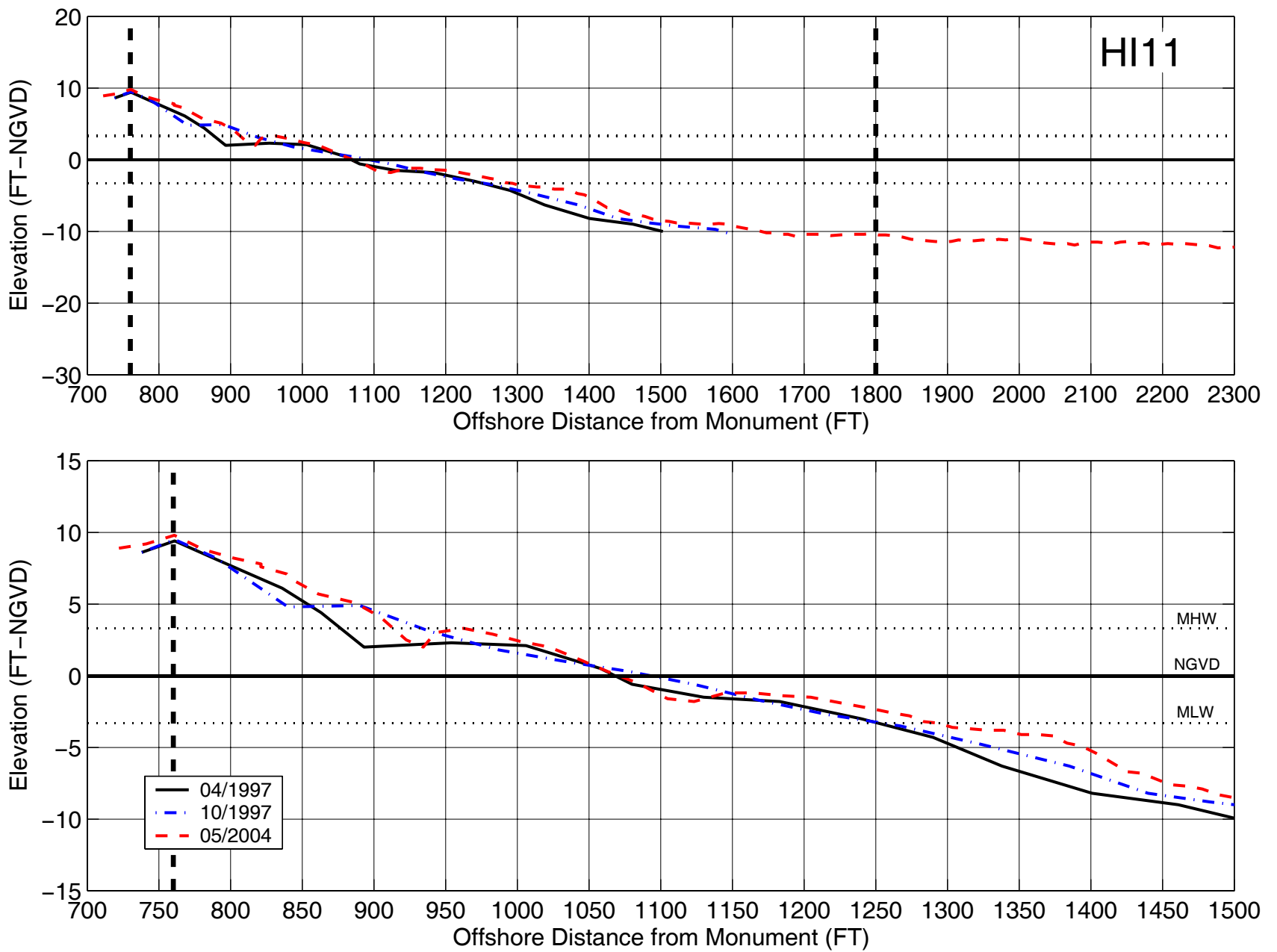
**Figure A-15:** Measured beach profiles at station HI09, Hilton Head Island, SC.



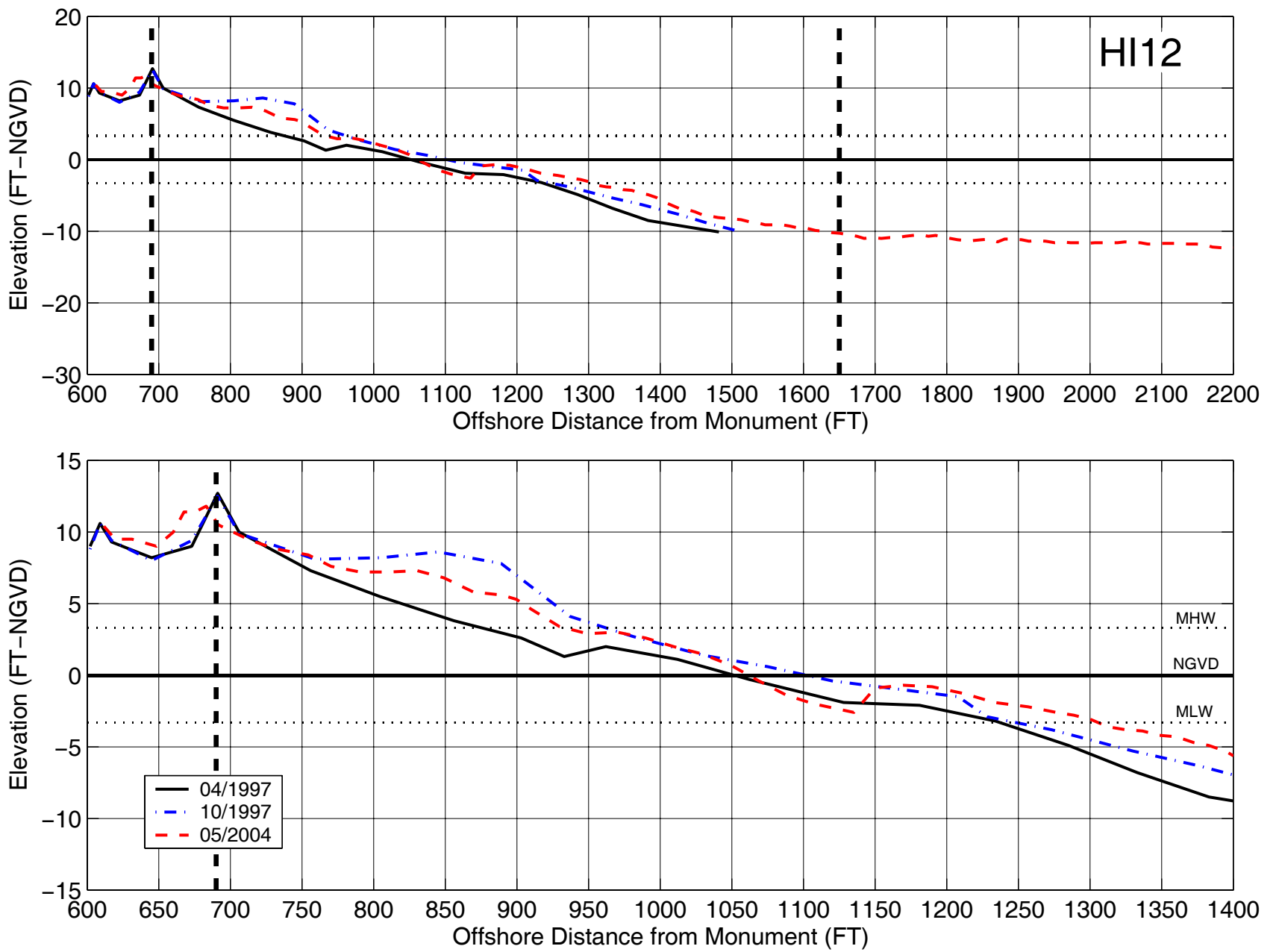
**Figure A-16:** Measured beach profiles at station HI10, Hilton Head Island, SC.



**Figure A-17:** Measured beach profiles at station HI11, Hilton Head Island, SC.

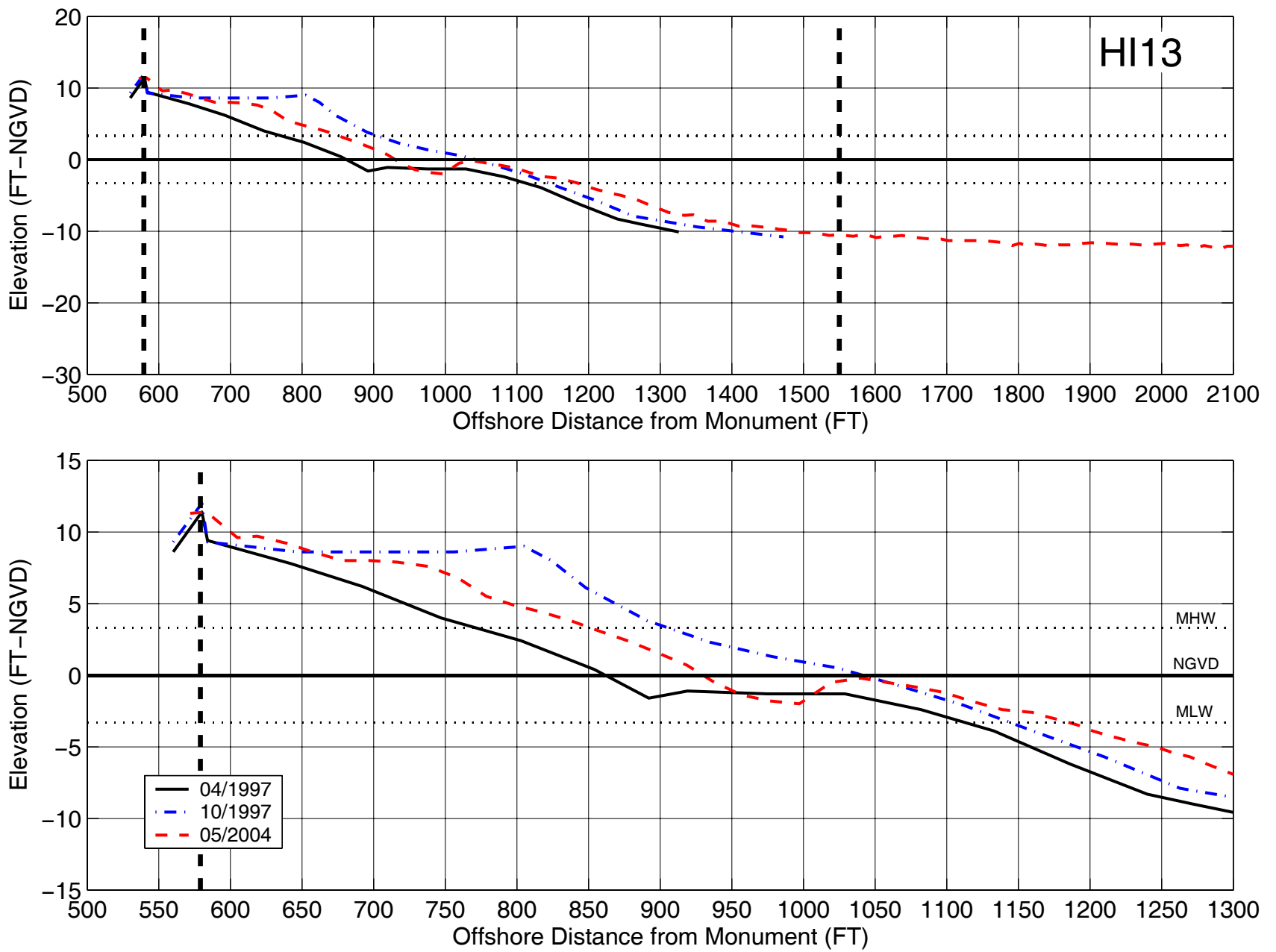


**Figure A-18:** Measured beach profiles at station HI12, Hilton Head Island, SC.

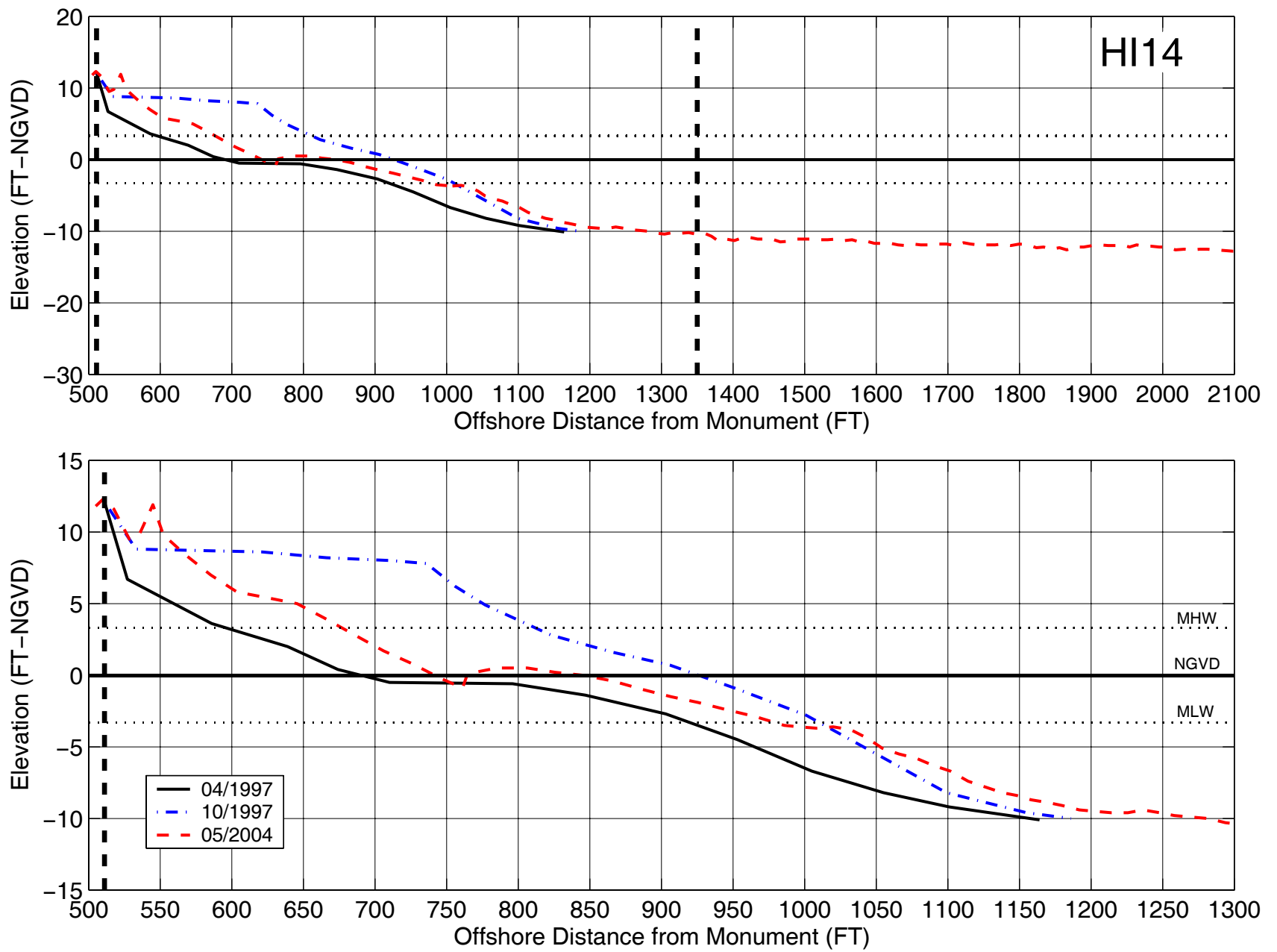




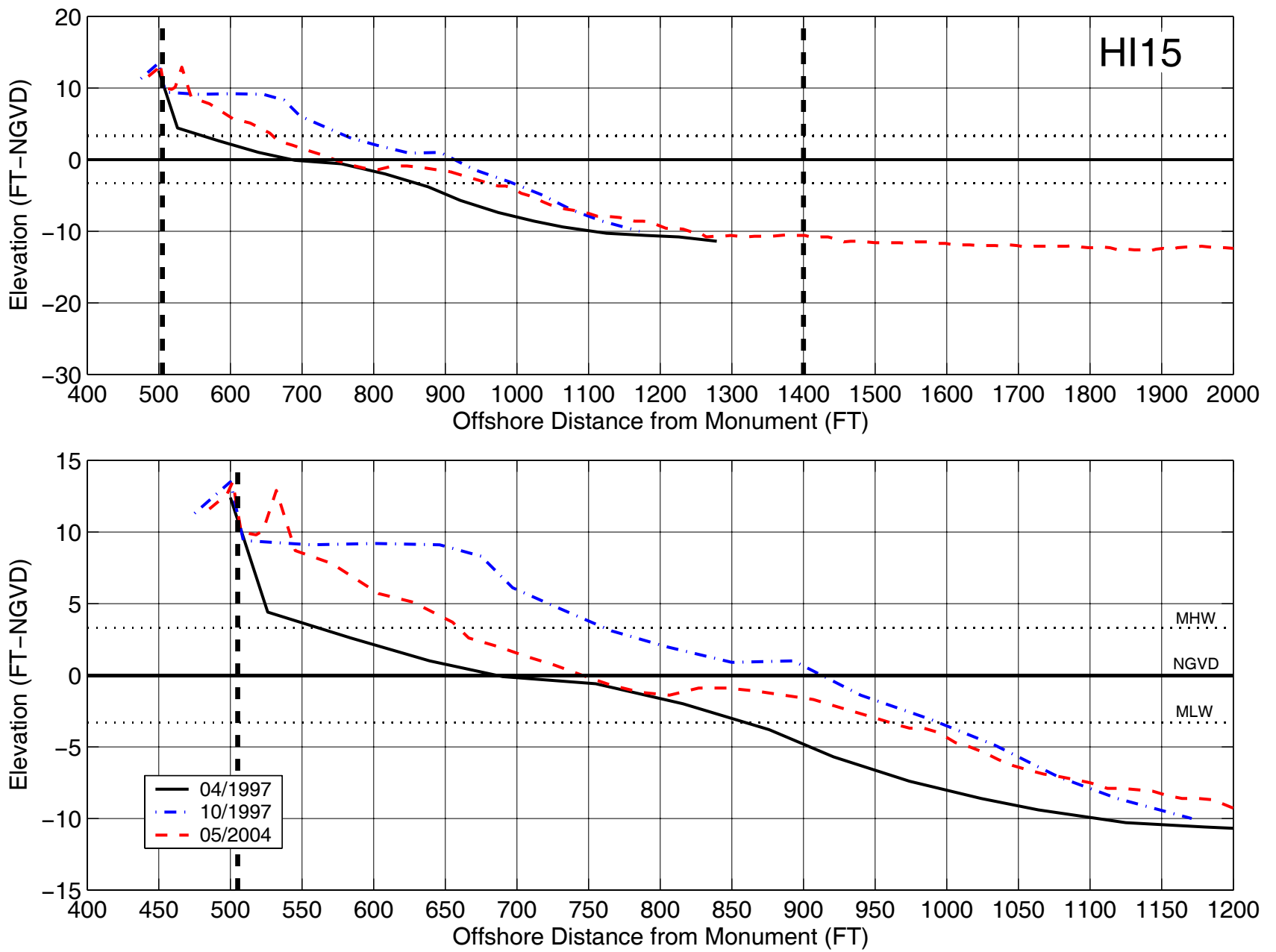
**Figure A-19:** Measured beach profiles at station HI13, Hilton Head Island, SC.



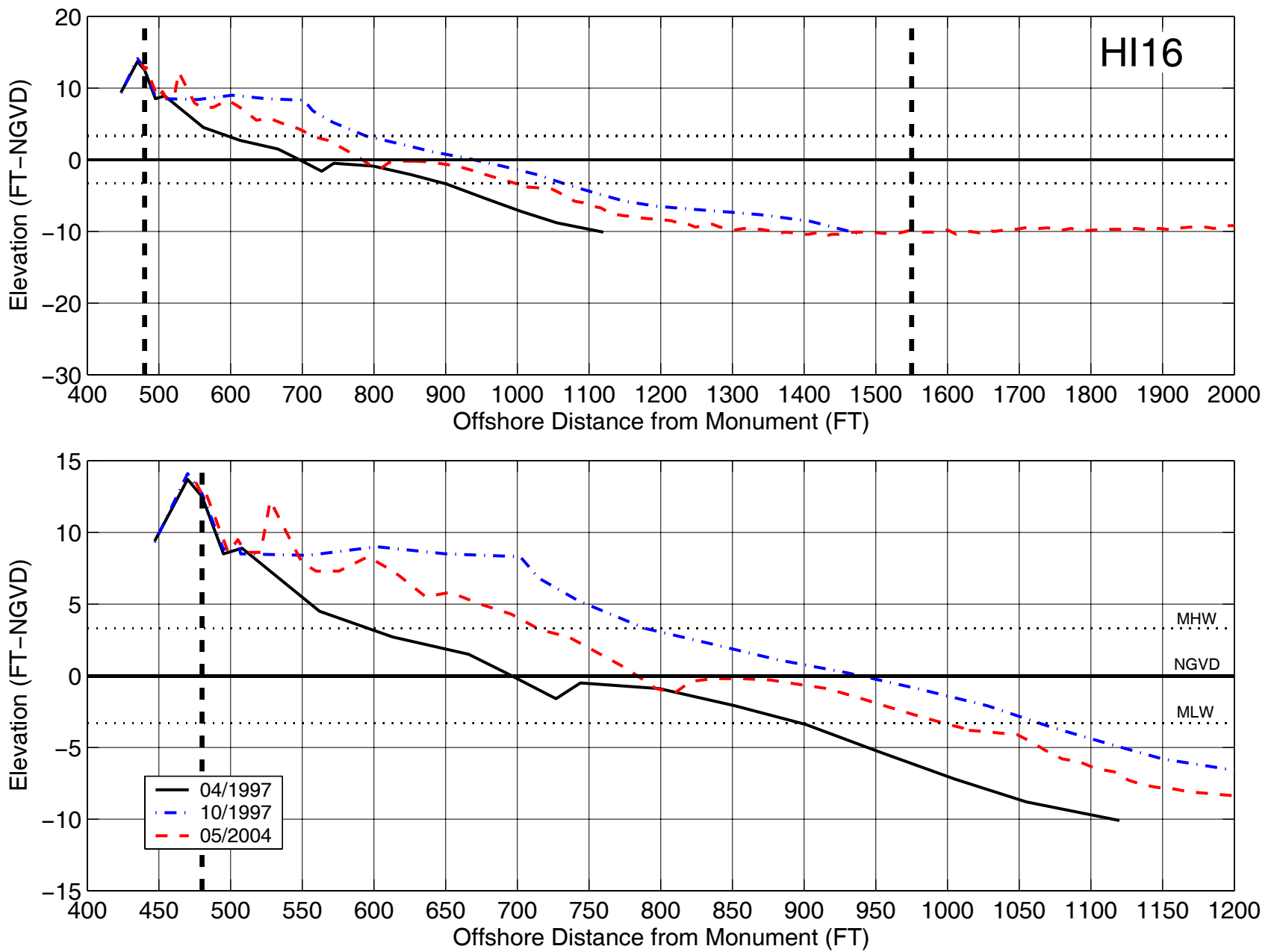
**Figure A-20:** Measured beach profiles at station HI14, Hilton Head Island, SC.



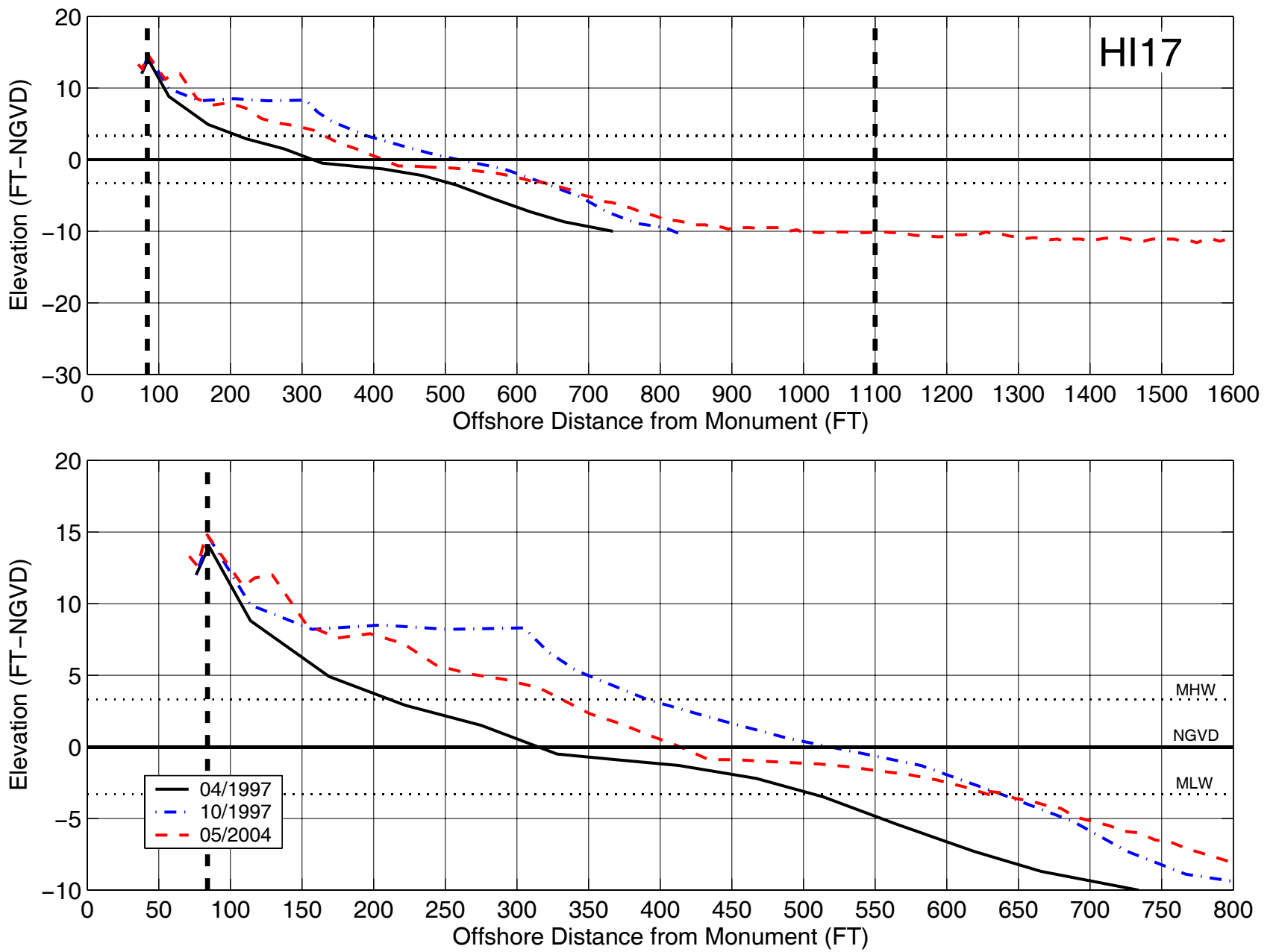
**Figure A-21:** Measured beach profiles at station HI15, Hilton Head Island, SC.



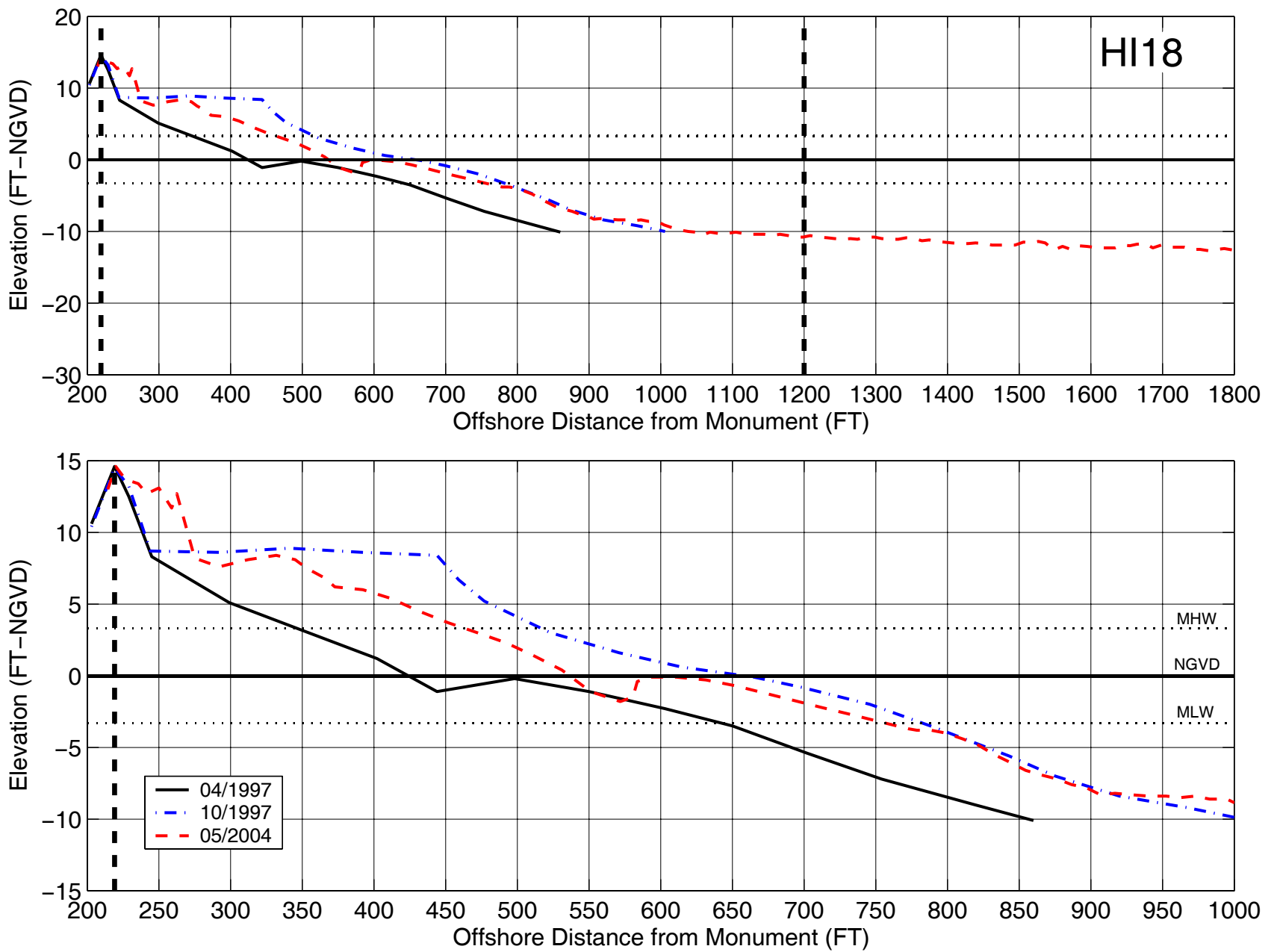
**Figure A-22:** Measured beach profiles at station HI16, Hilton Head Island, SC.



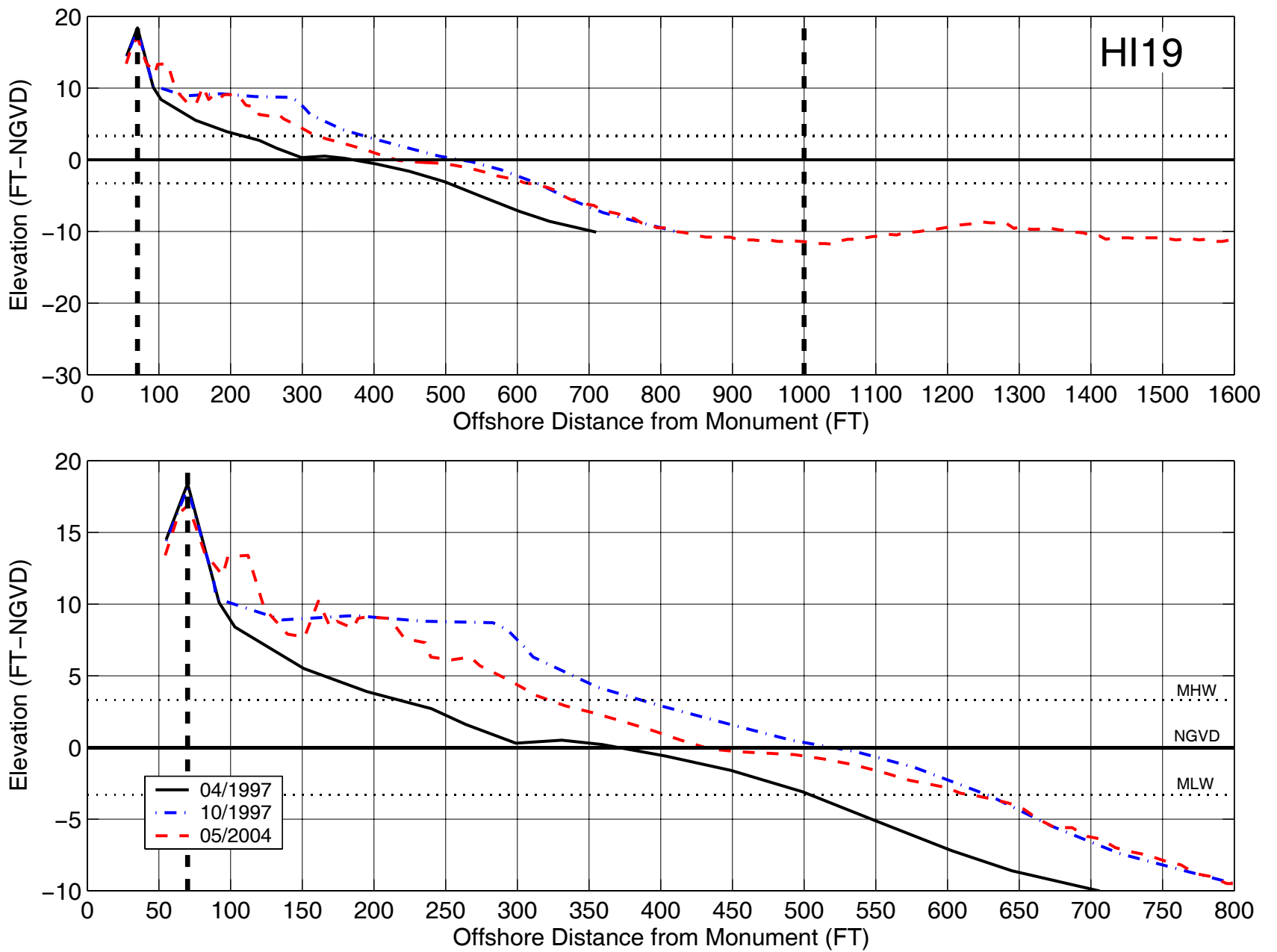
**Figure A-23:** Measured beach profiles at station HI17, Hilton Head Island, SC.



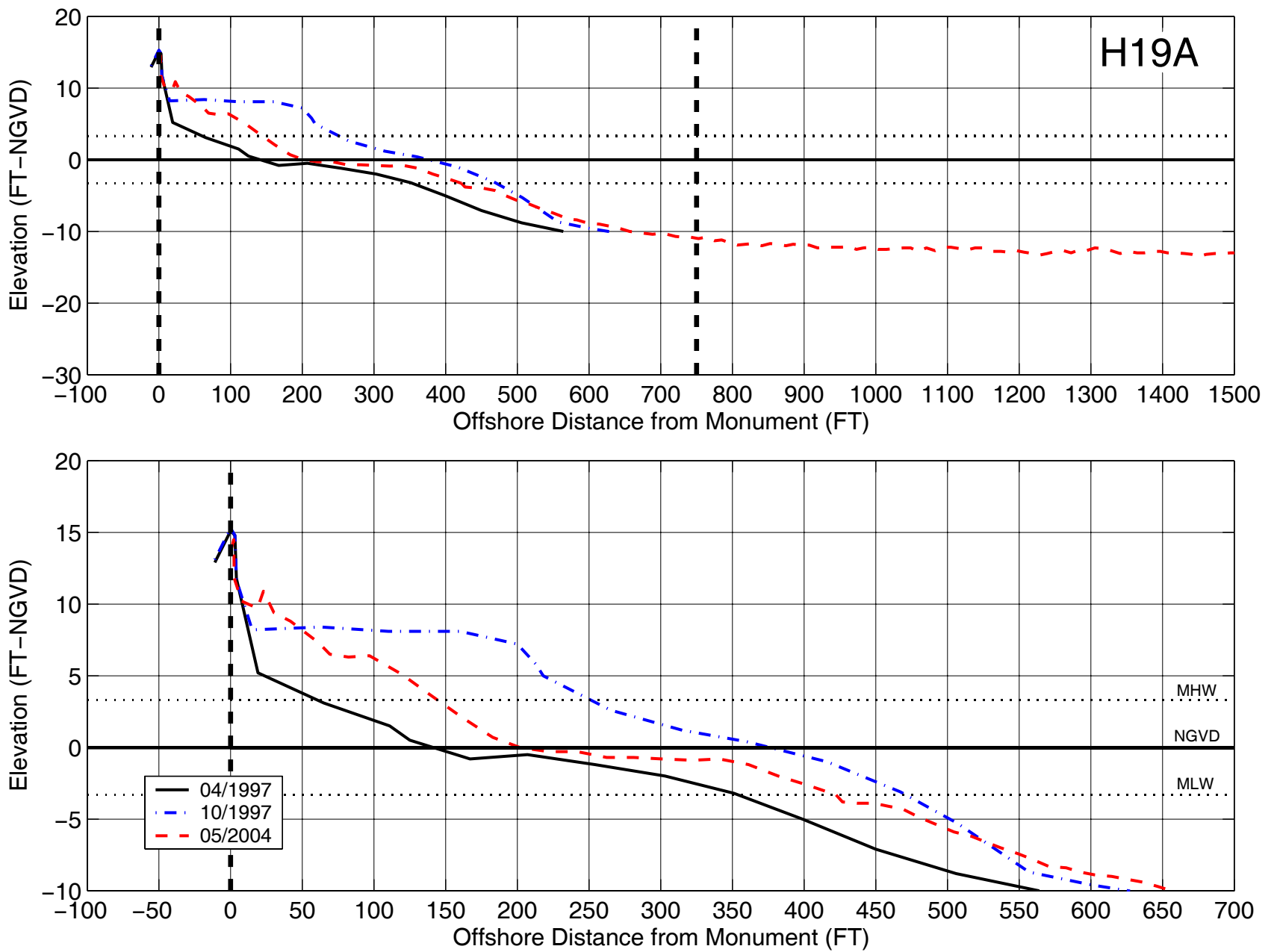
**Figure A-24:** Measured beach profiles at station HI18, Hilton Head Island, SC.



**Figure A-25:** Measured beach profiles at station HI19, Hilton Head Island, SC.

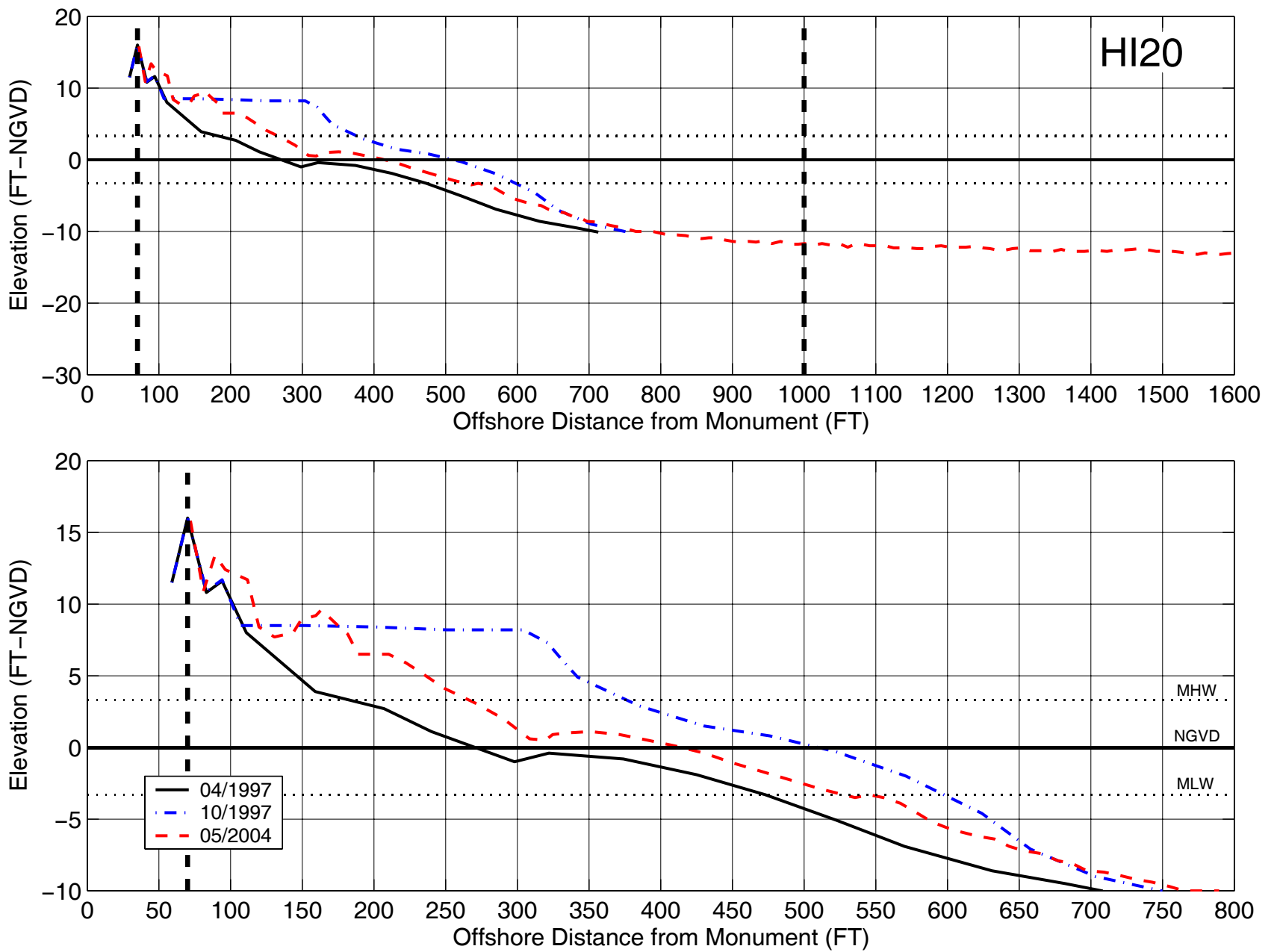


**Figure A-26:** Measured beach profiles at station H19A, Hilton Head Island, SC.

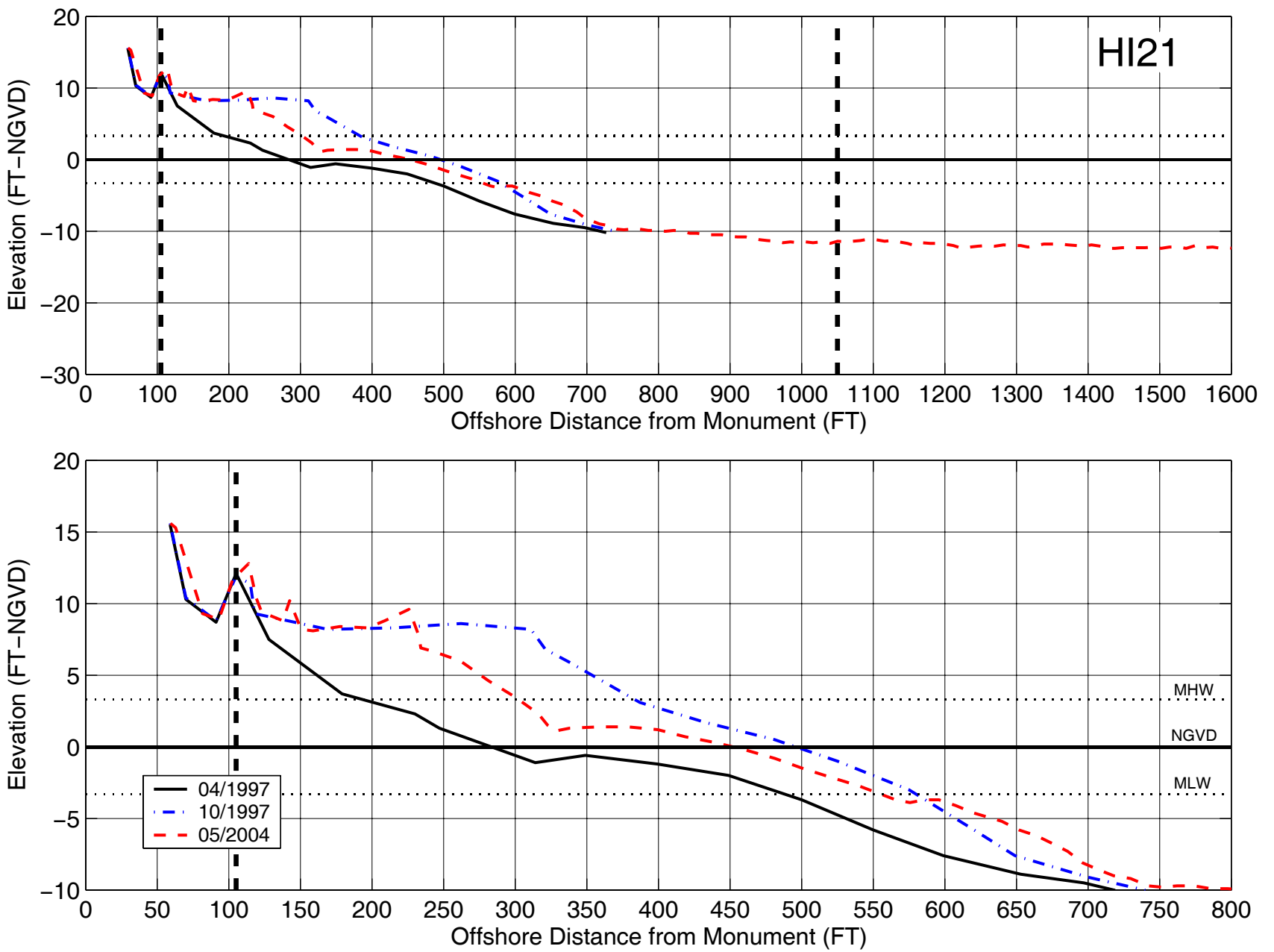




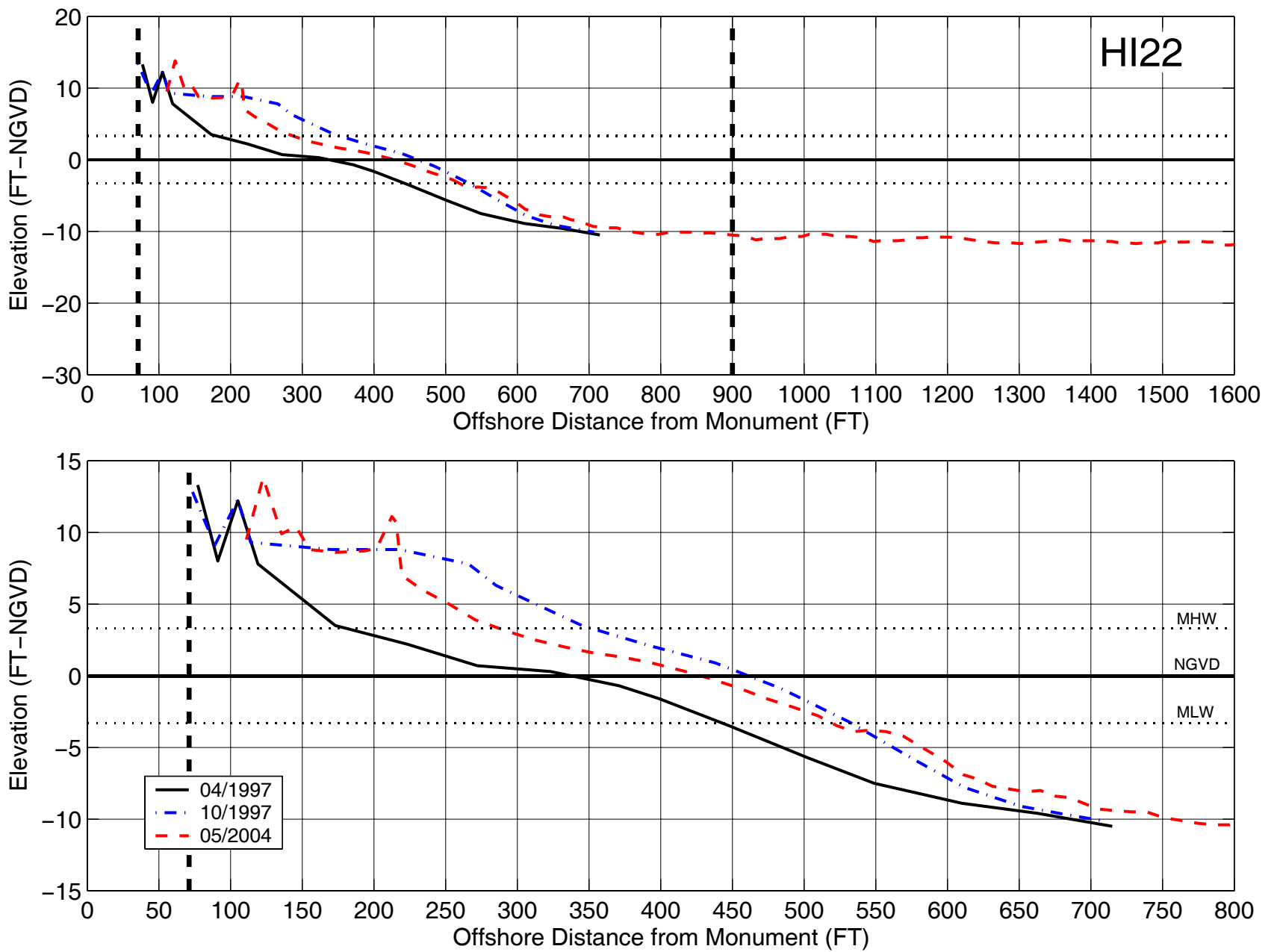
**Figure A-27:** Measured beach profiles at station HI20, Hilton Head Island, SC.



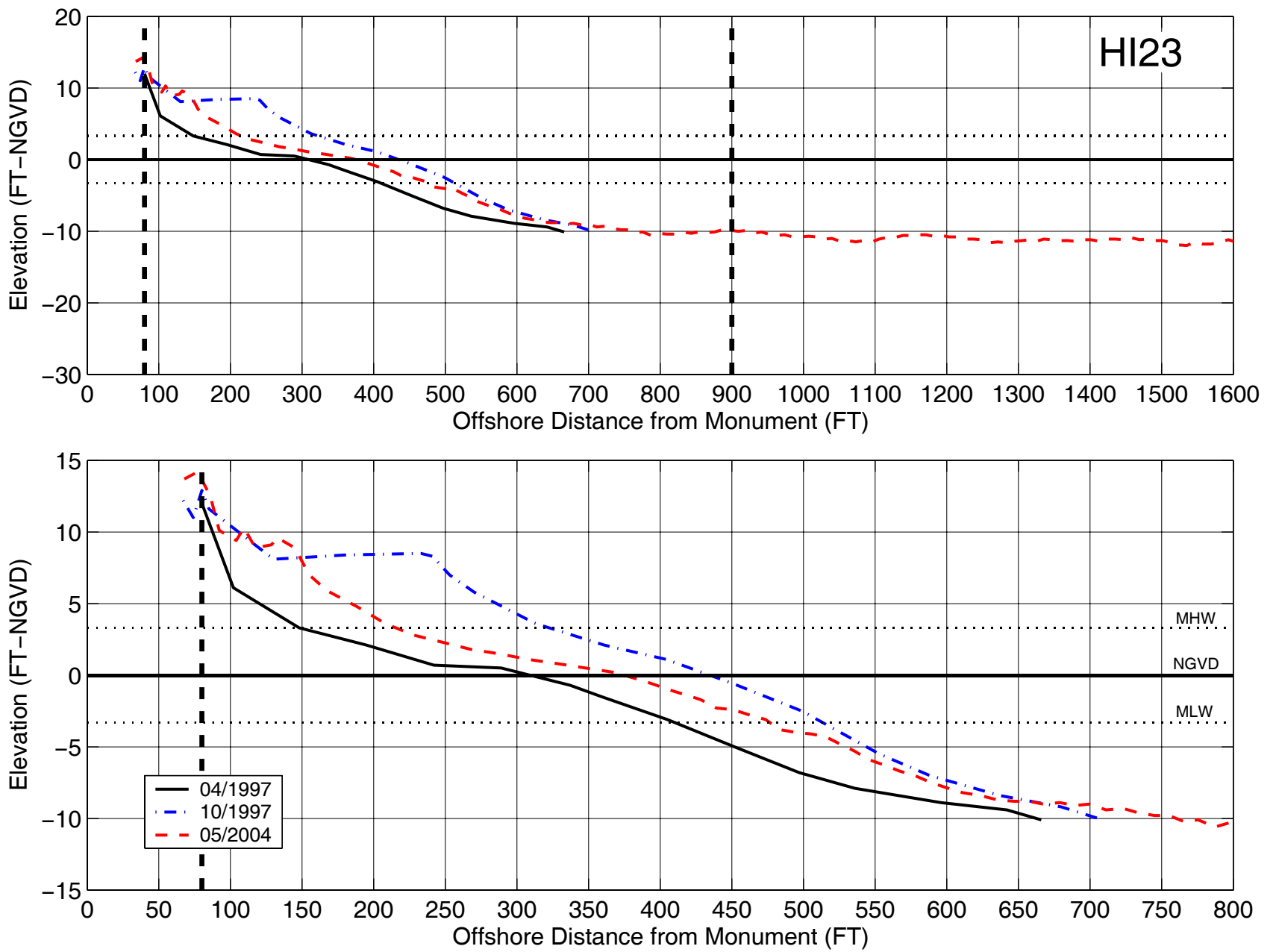
**Figure A-28:** Measured beach profiles at station HI21, Hilton Head Island, SC.



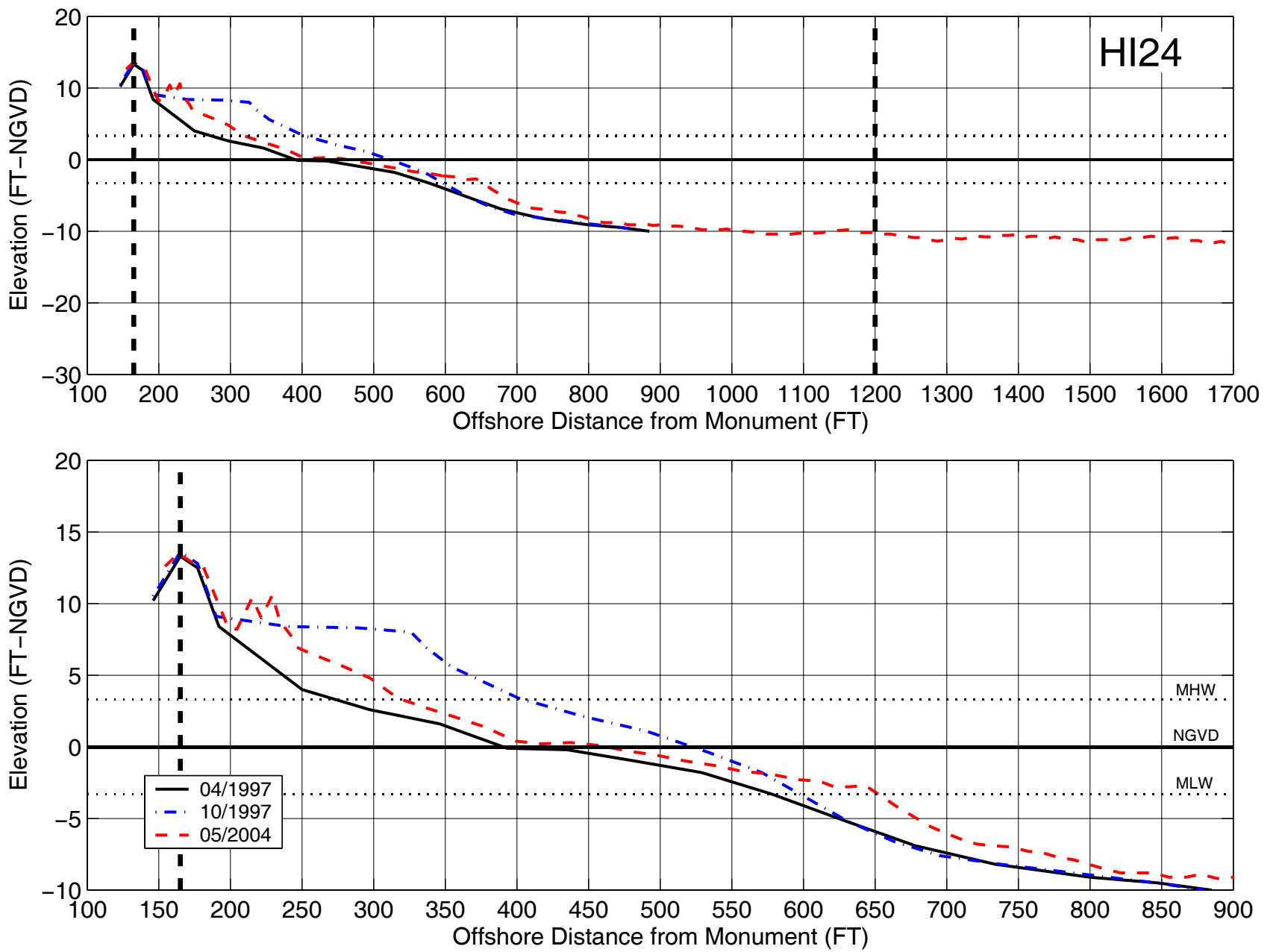
**Figure A-29:** Measured beach profiles at station HI22, Hilton Head Island, SC.



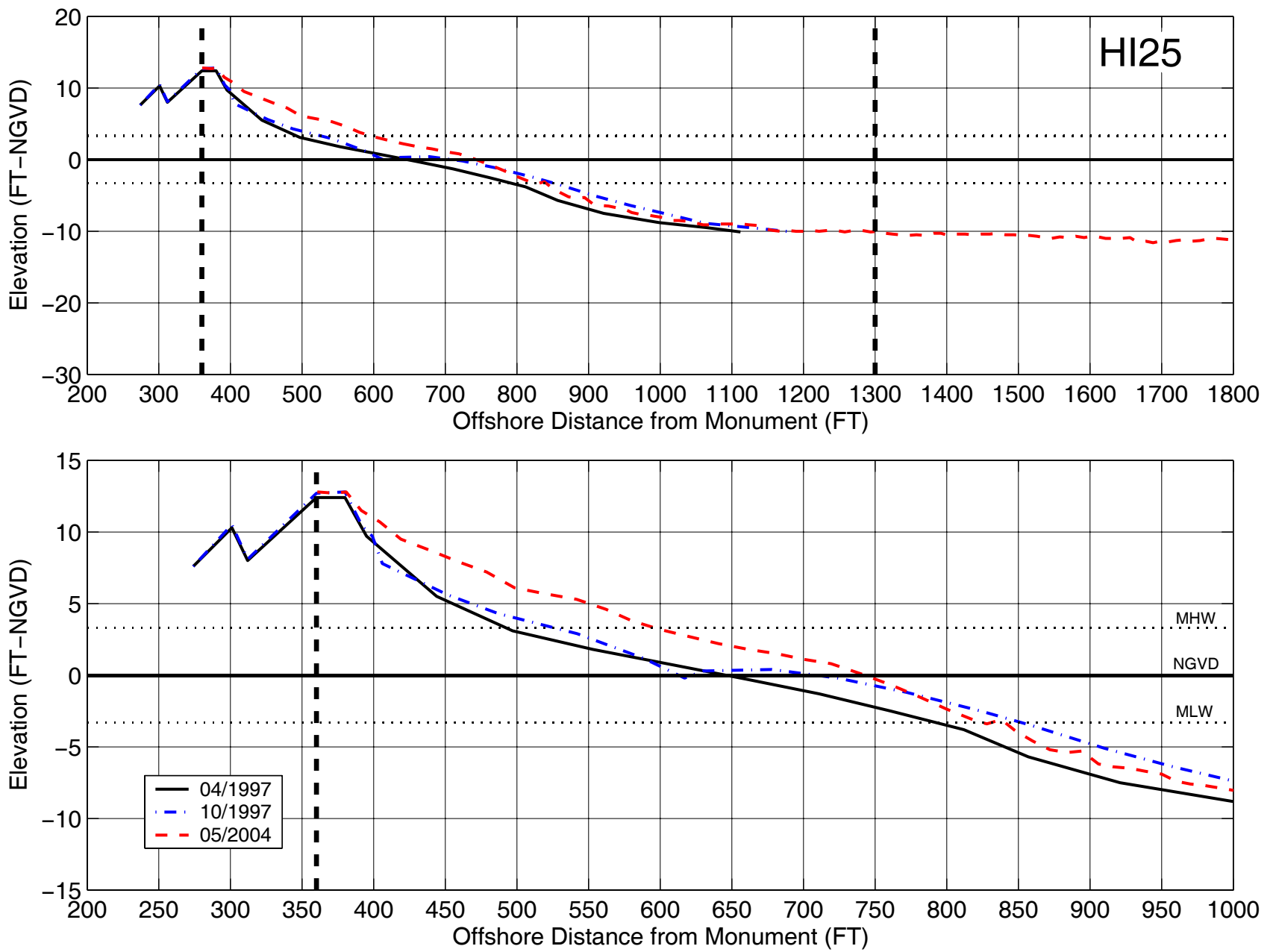
**Figure A-30:** Measured beach profiles at station HI23, Hilton Head Island, SC.



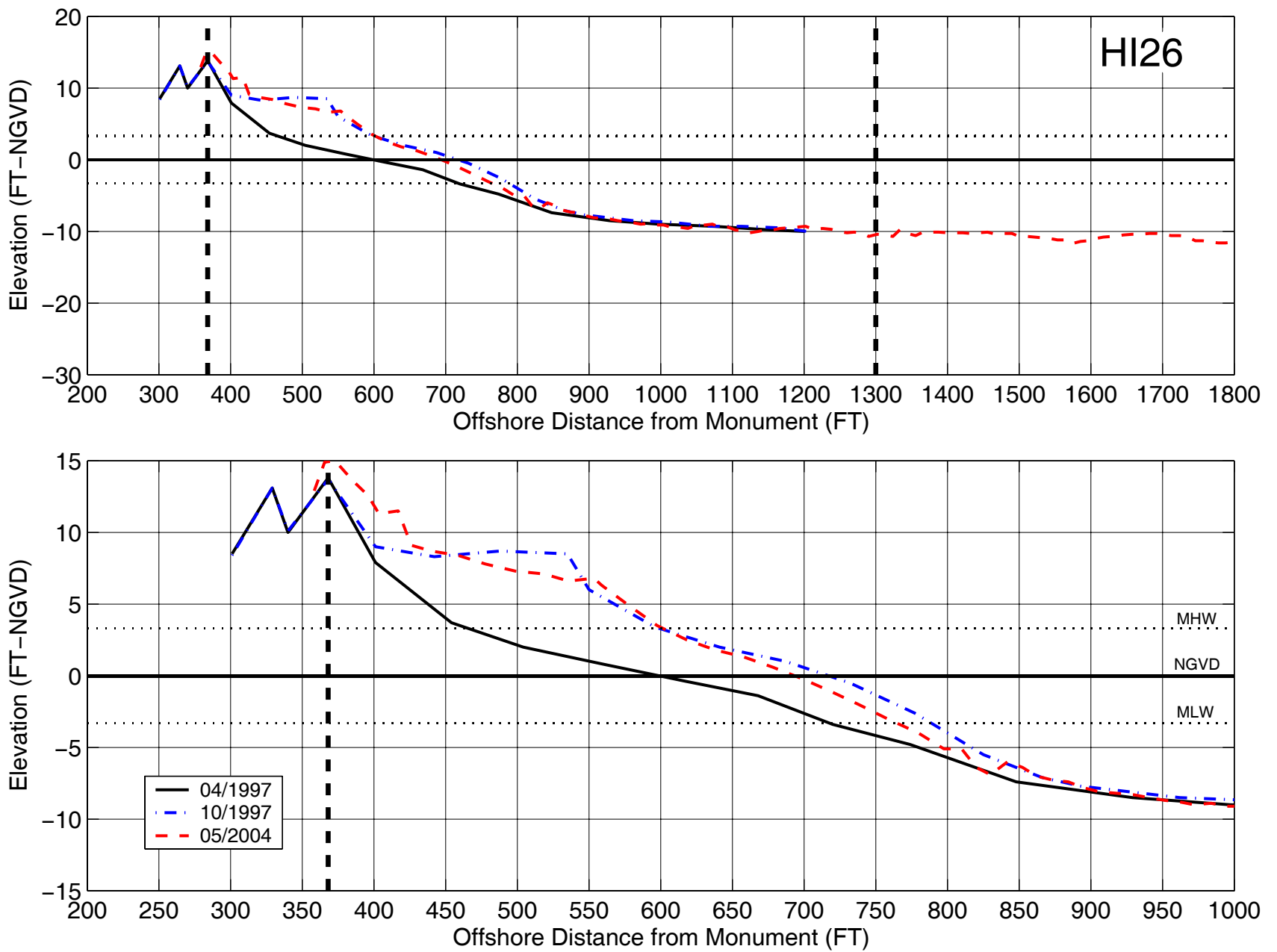
**Figure A-31:** Measured beach profiles at station HI24, Hilton Head Island, SC.



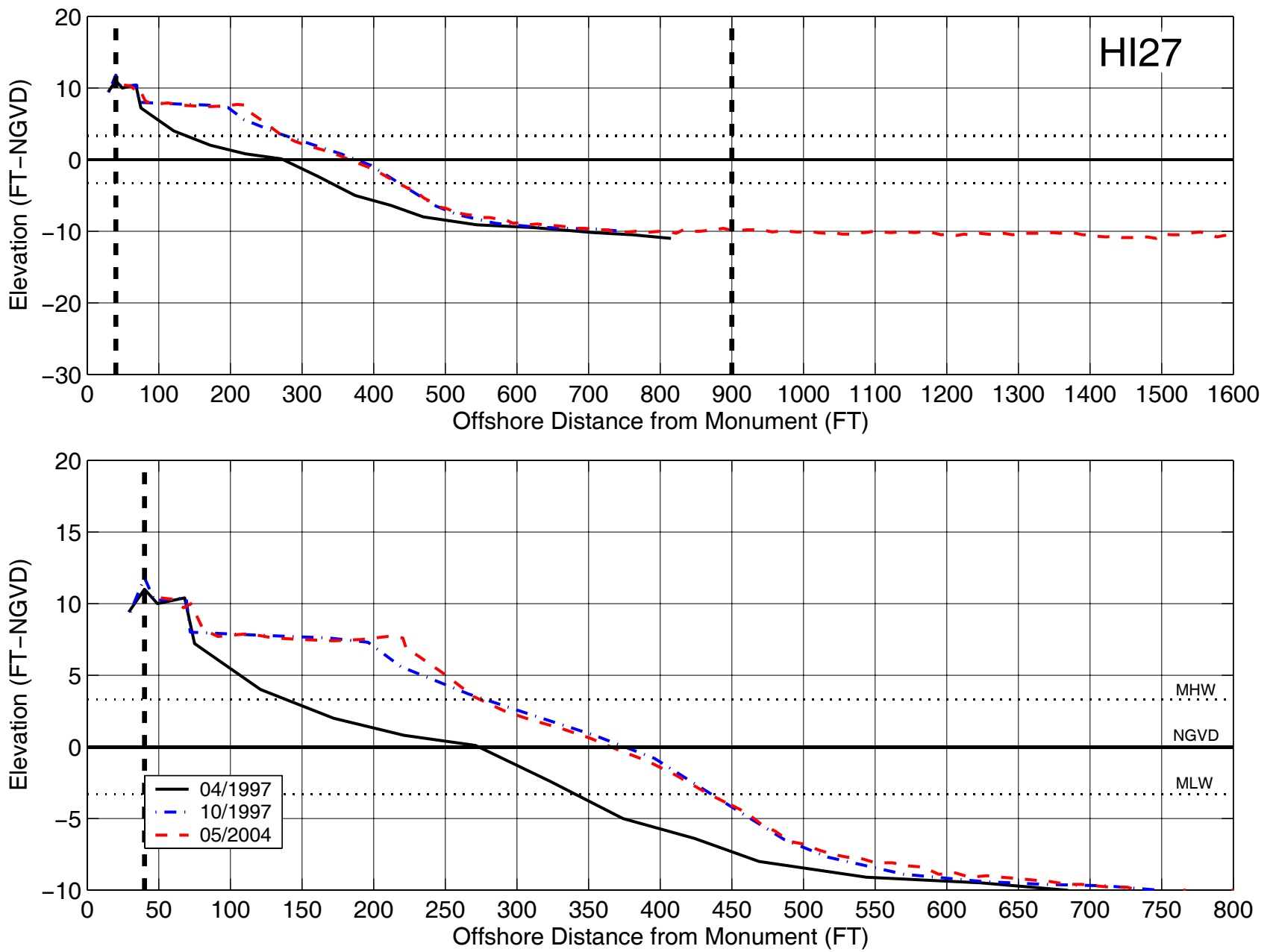
**Figure A-32:** Measured beach profiles at station HI25, Hilton Head Island, SC.



**Figure A-33:** Measured beach profiles at station HI26, Hilton Head Island, SC.

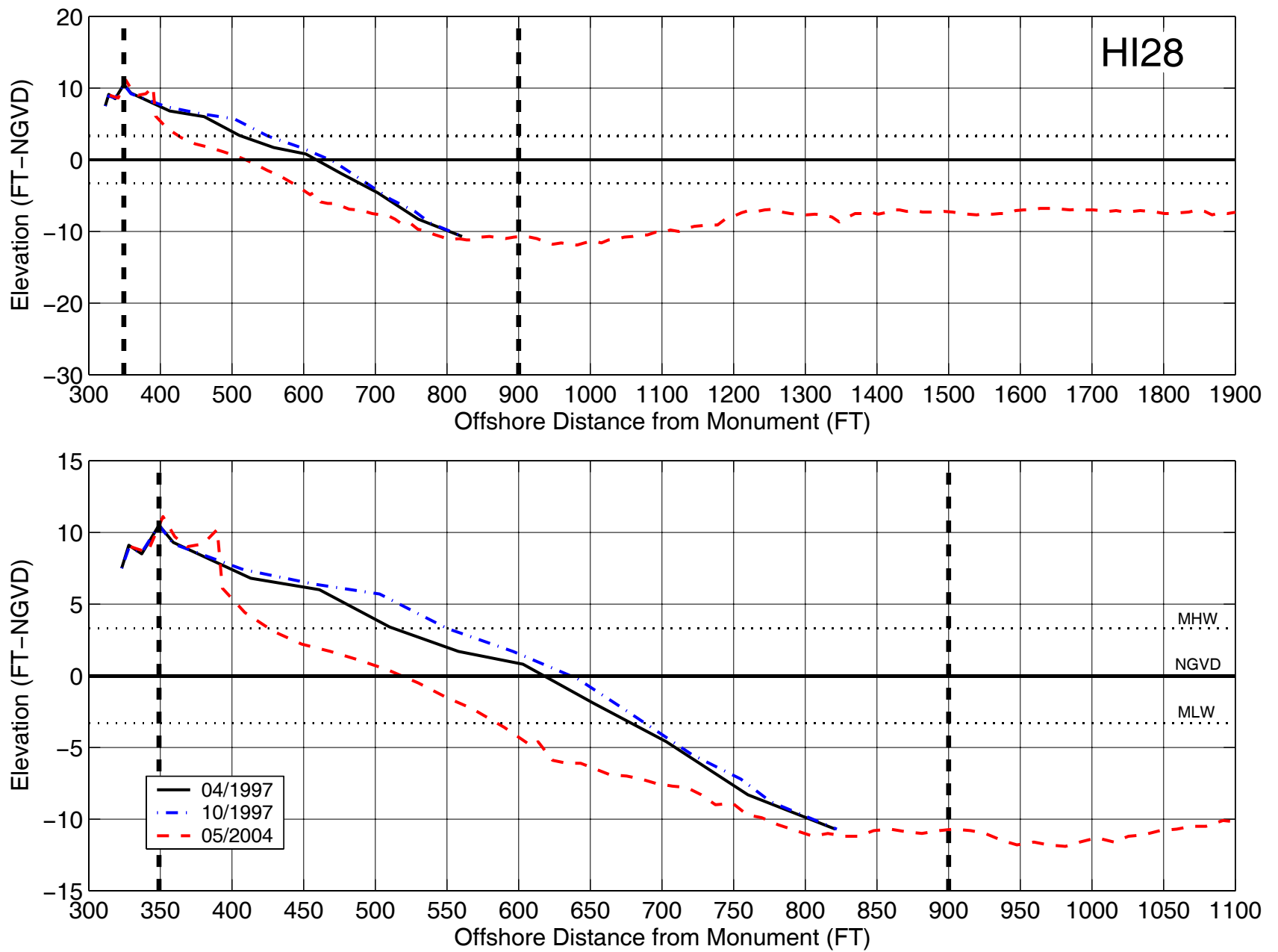


**Figure A-34:** Measured beach profiles at station HI27, Hilton Head Island, SC.

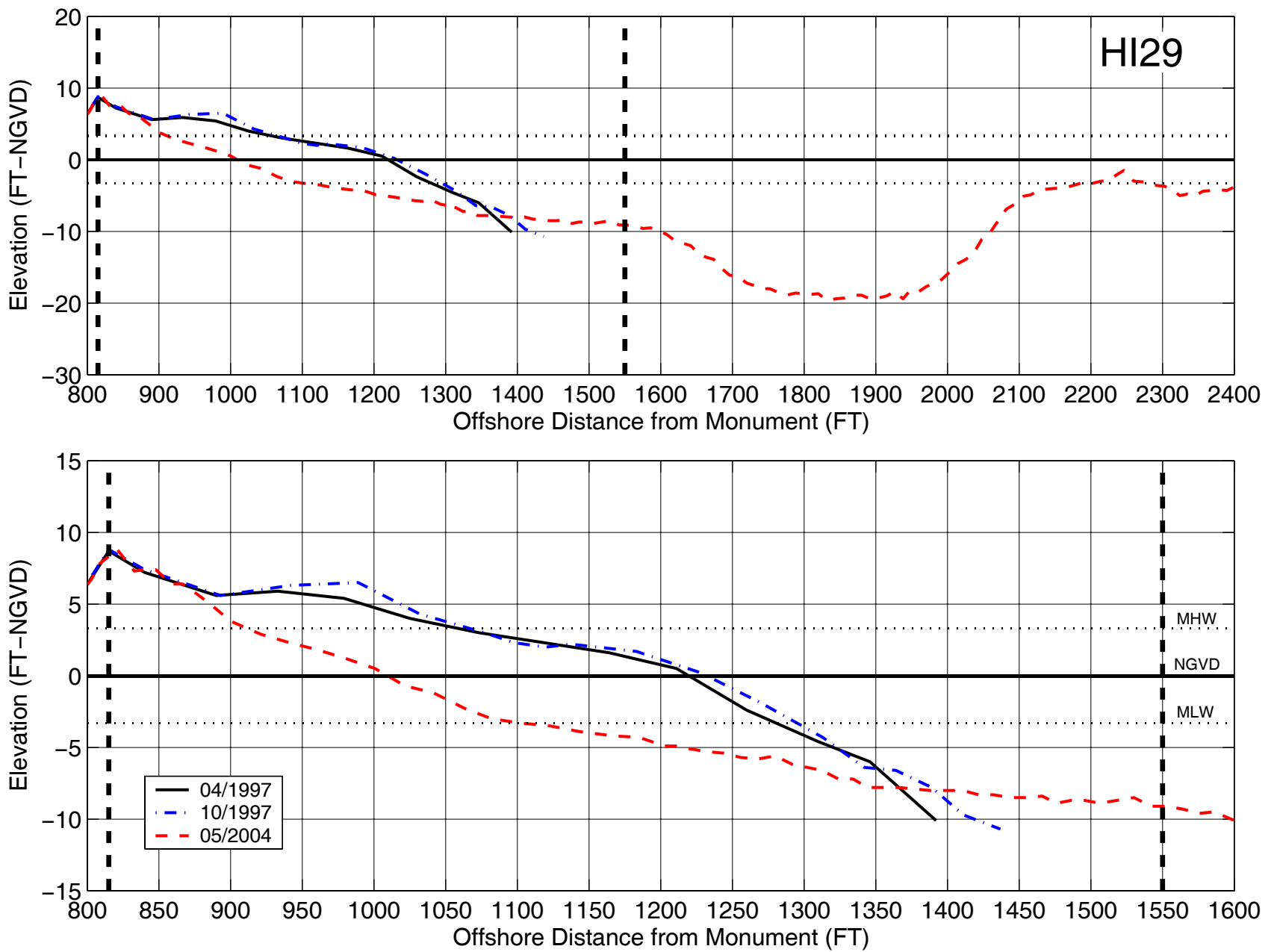




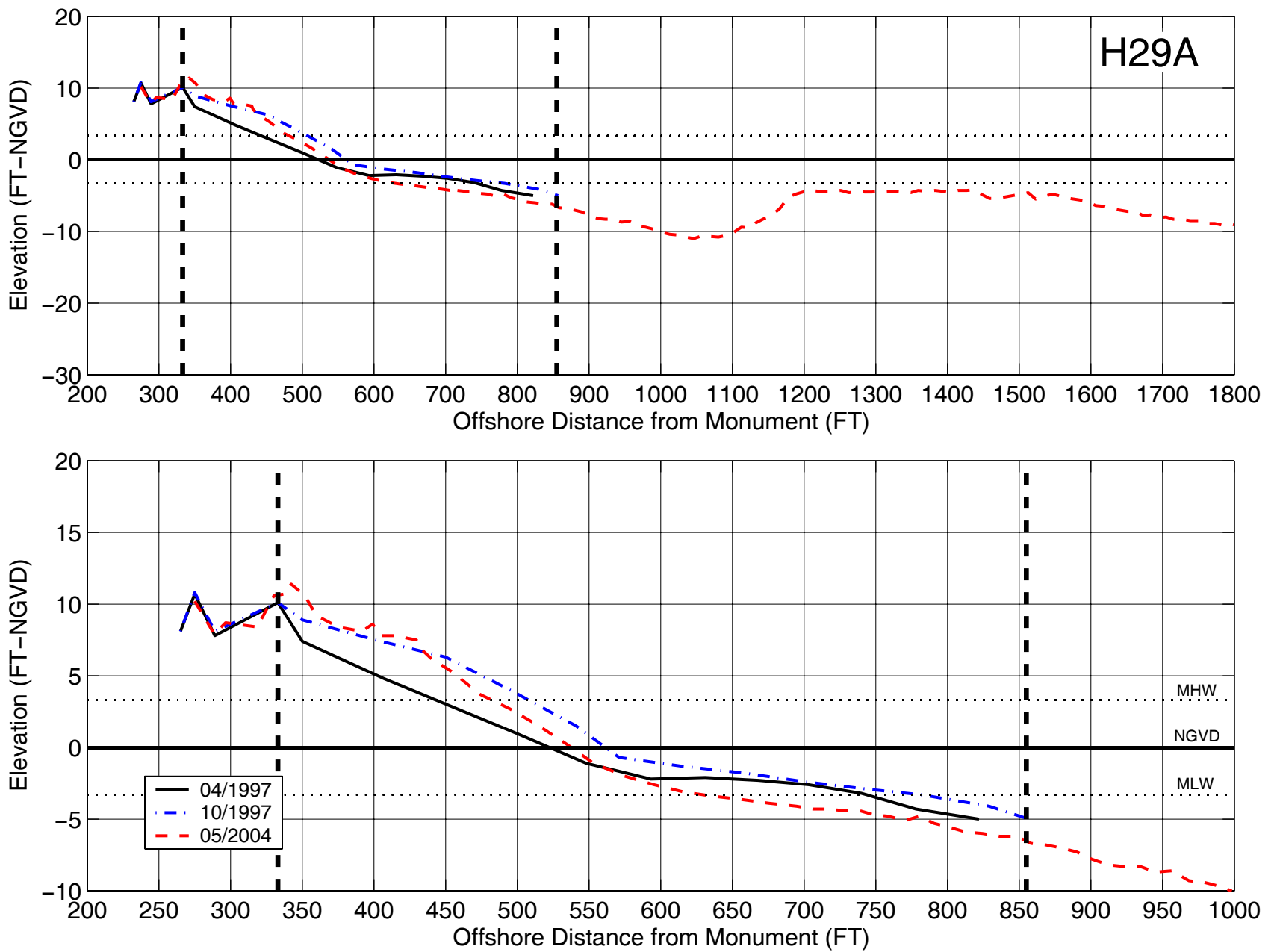
**Figure A-35:** Measured beach profiles at station HI28, Hilton Head Island, SC.



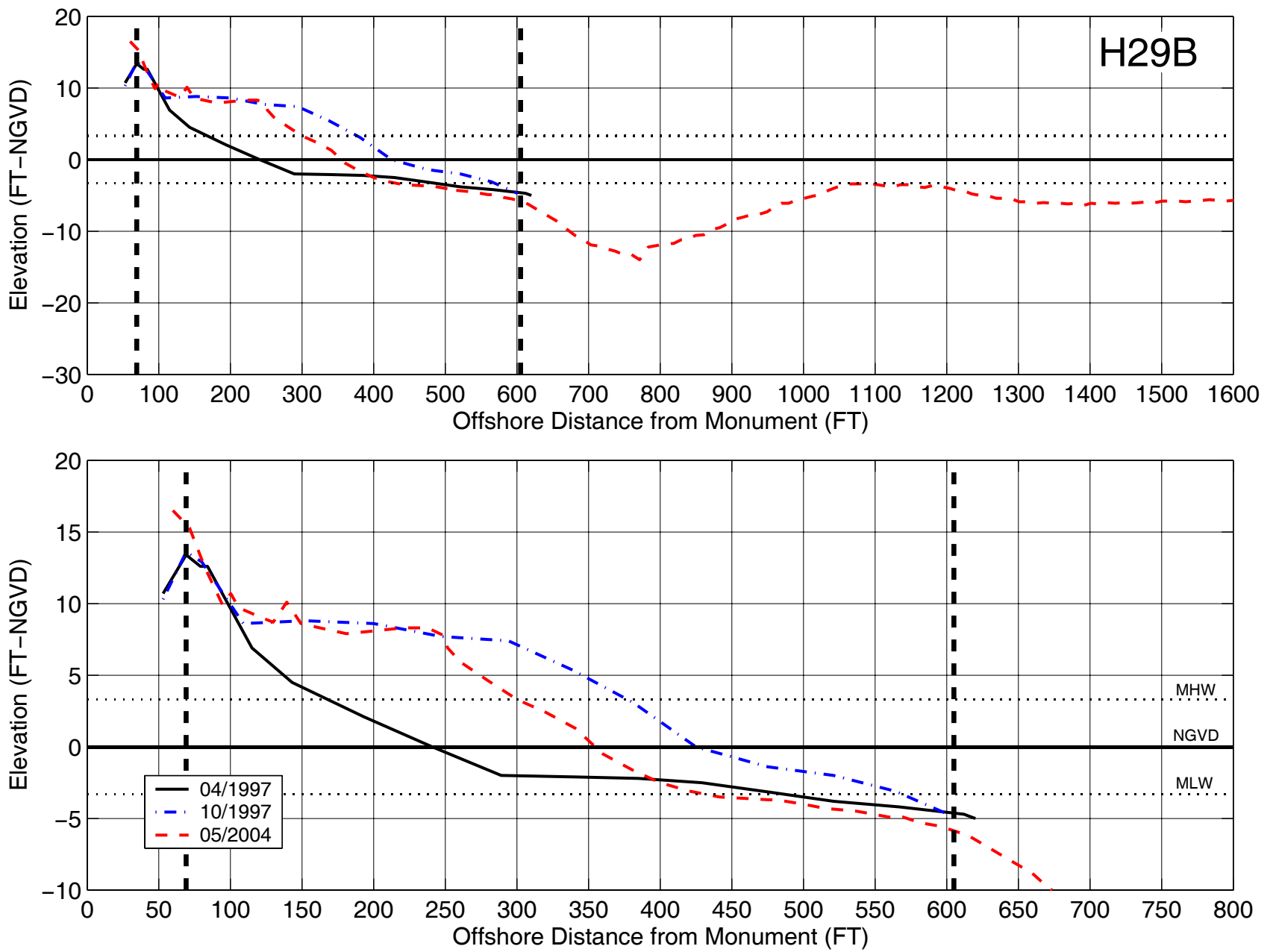
**Figure A-36:** Measured beach profiles at station HI29, Hilton Head Island, SC.



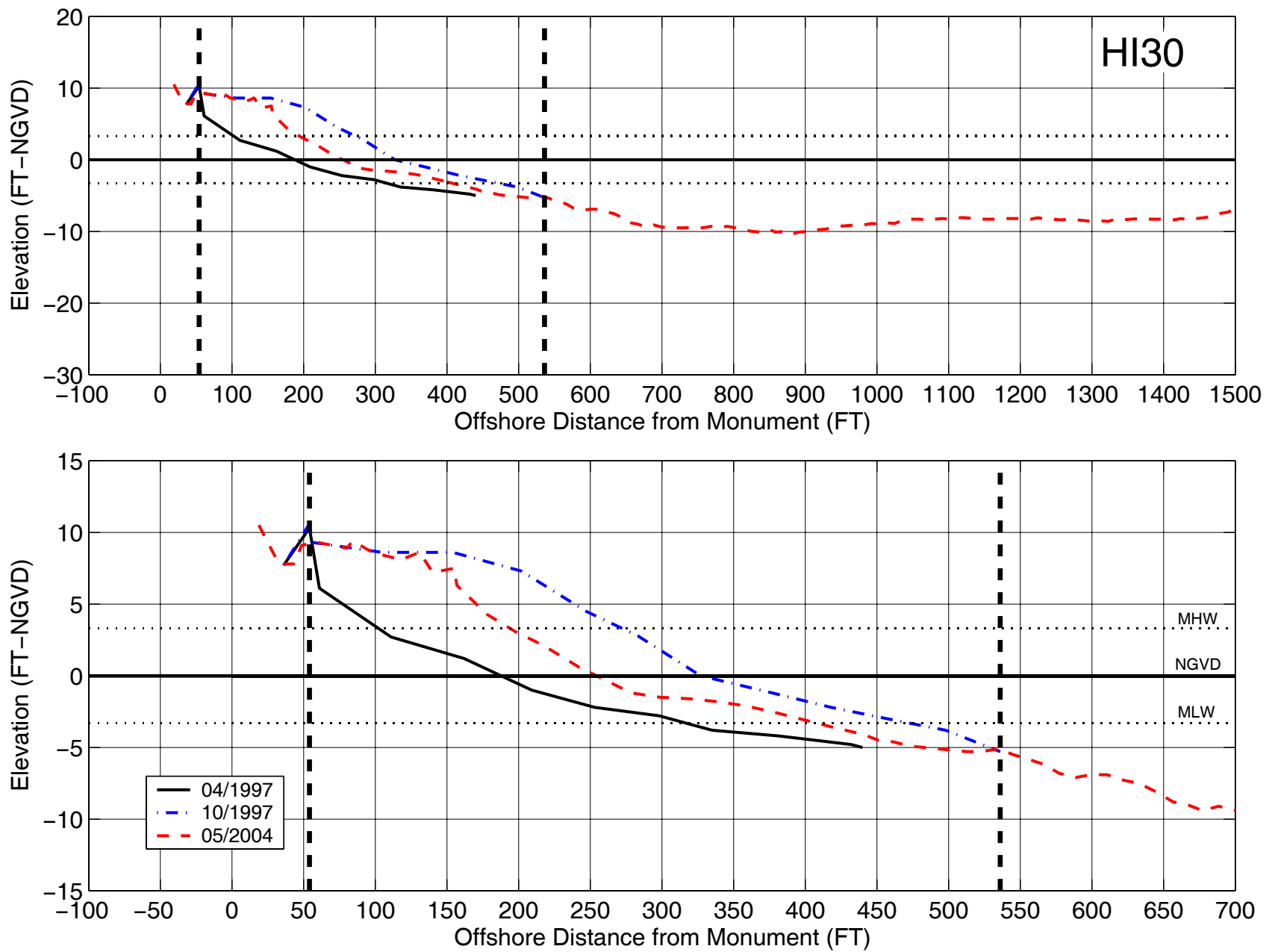
**Figure A-37:** Measured beach profiles at station H29A, Hilton Head Island, SC.



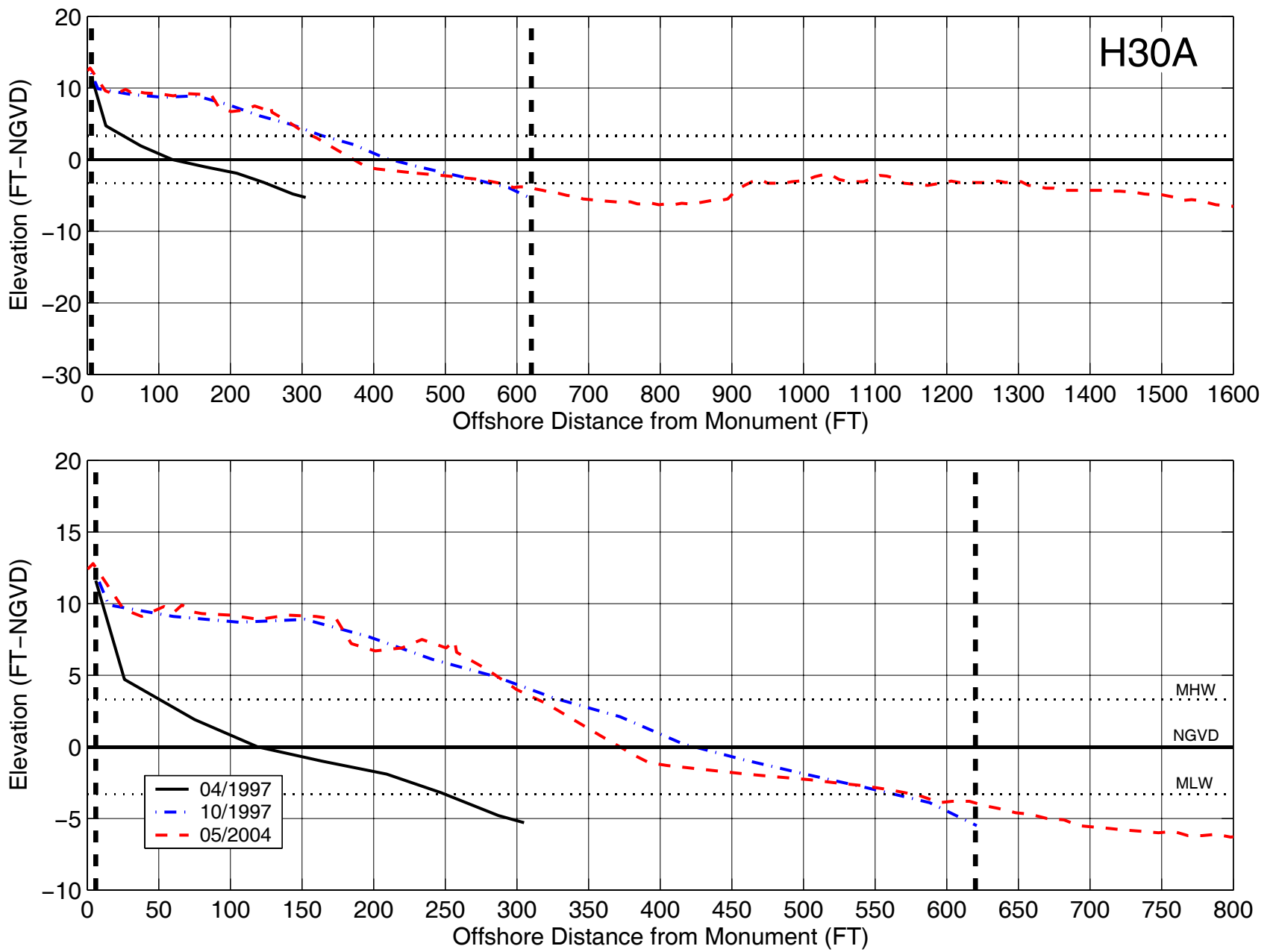
**Figure A-38:** Measured beach profiles at station H29B, Hilton Head Island, SC.



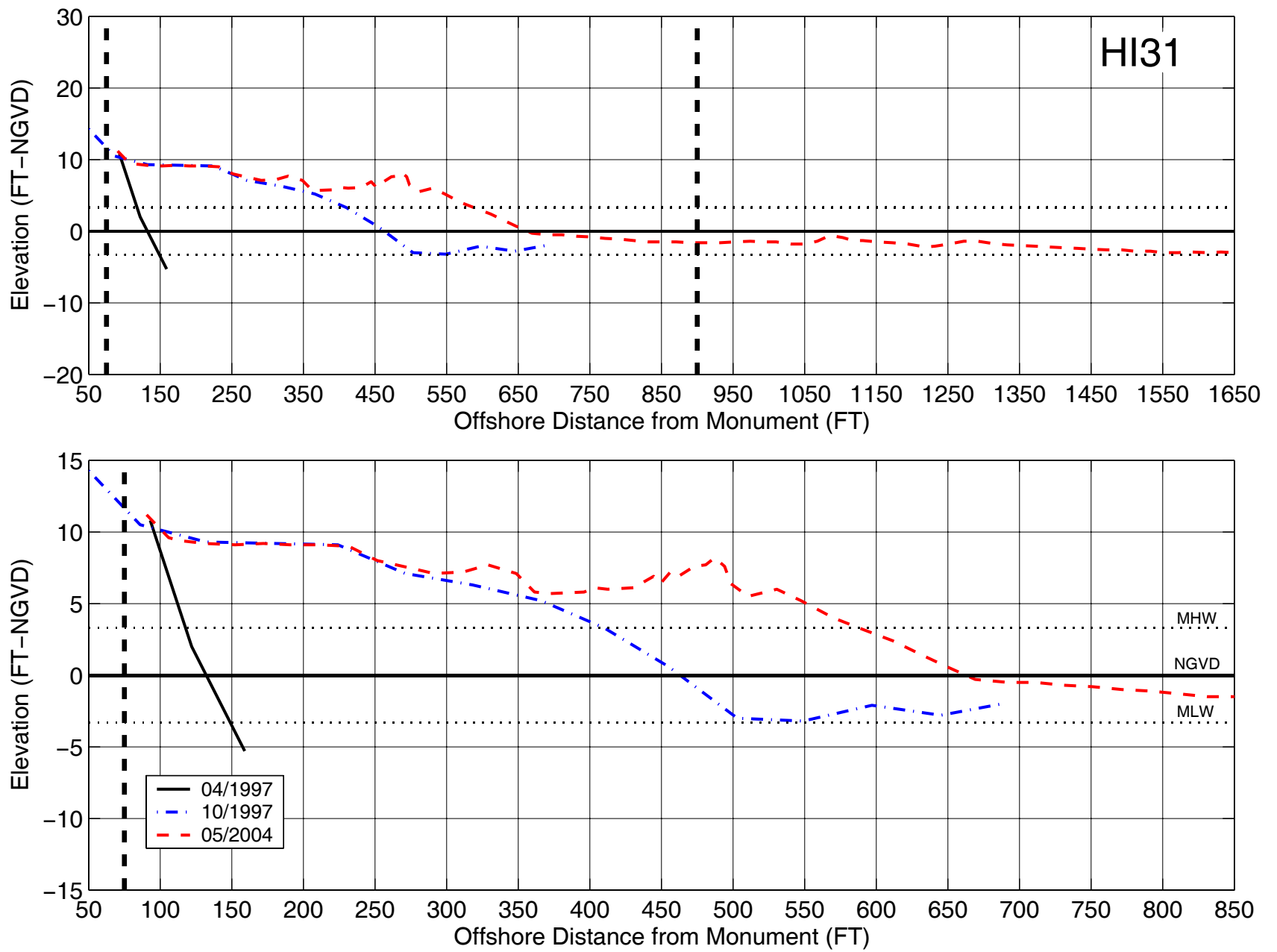
**Figure A-39:** Measured beach profiles at station HI30, Hilton Head Island, SC.



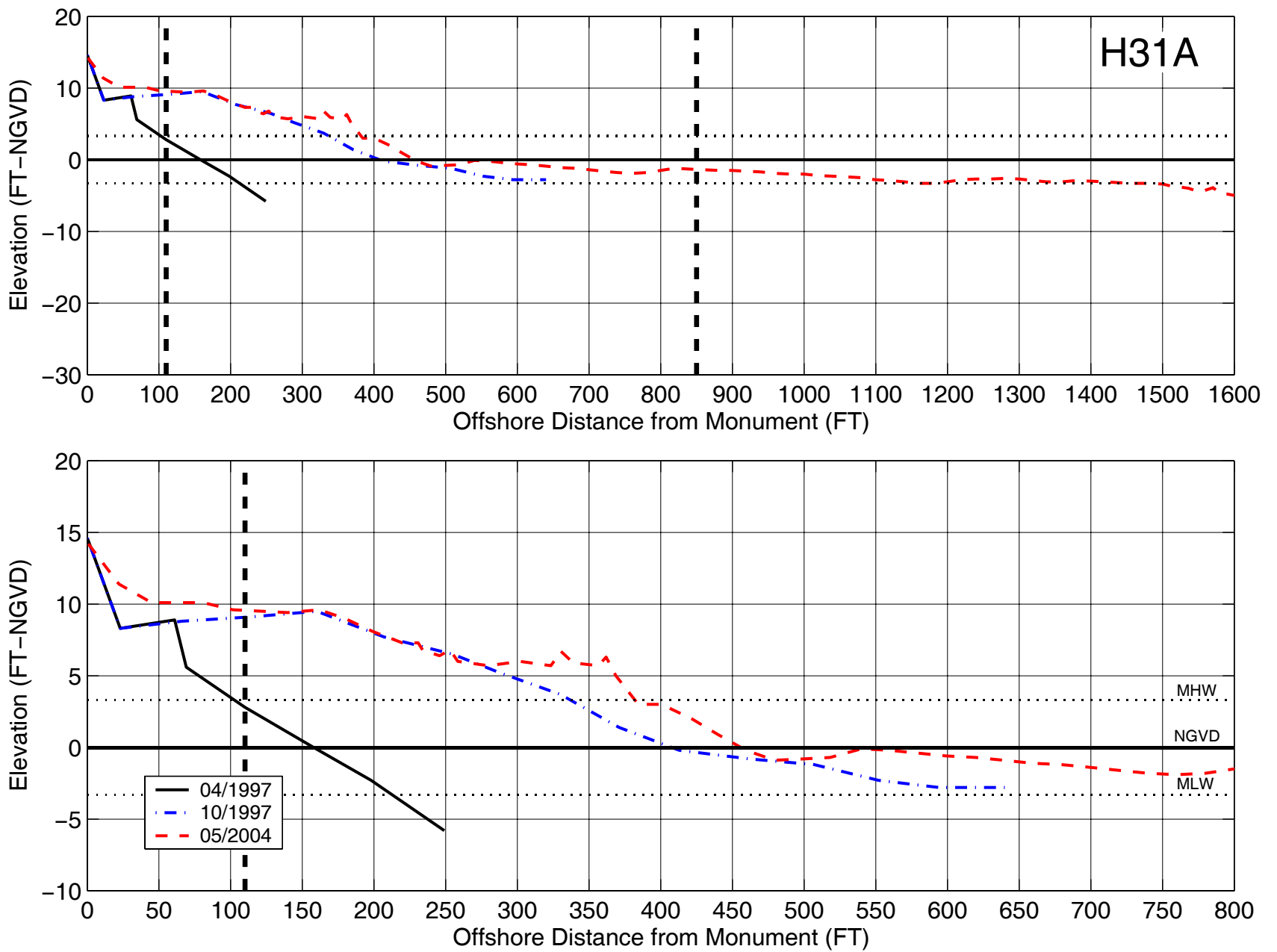
**Figure A-40:** Measured beach profiles at station H30A, Hilton Head Island, SC.



**Figure A-41:** Measured beach profiles at station HI31, Hilton Head Island, SC.

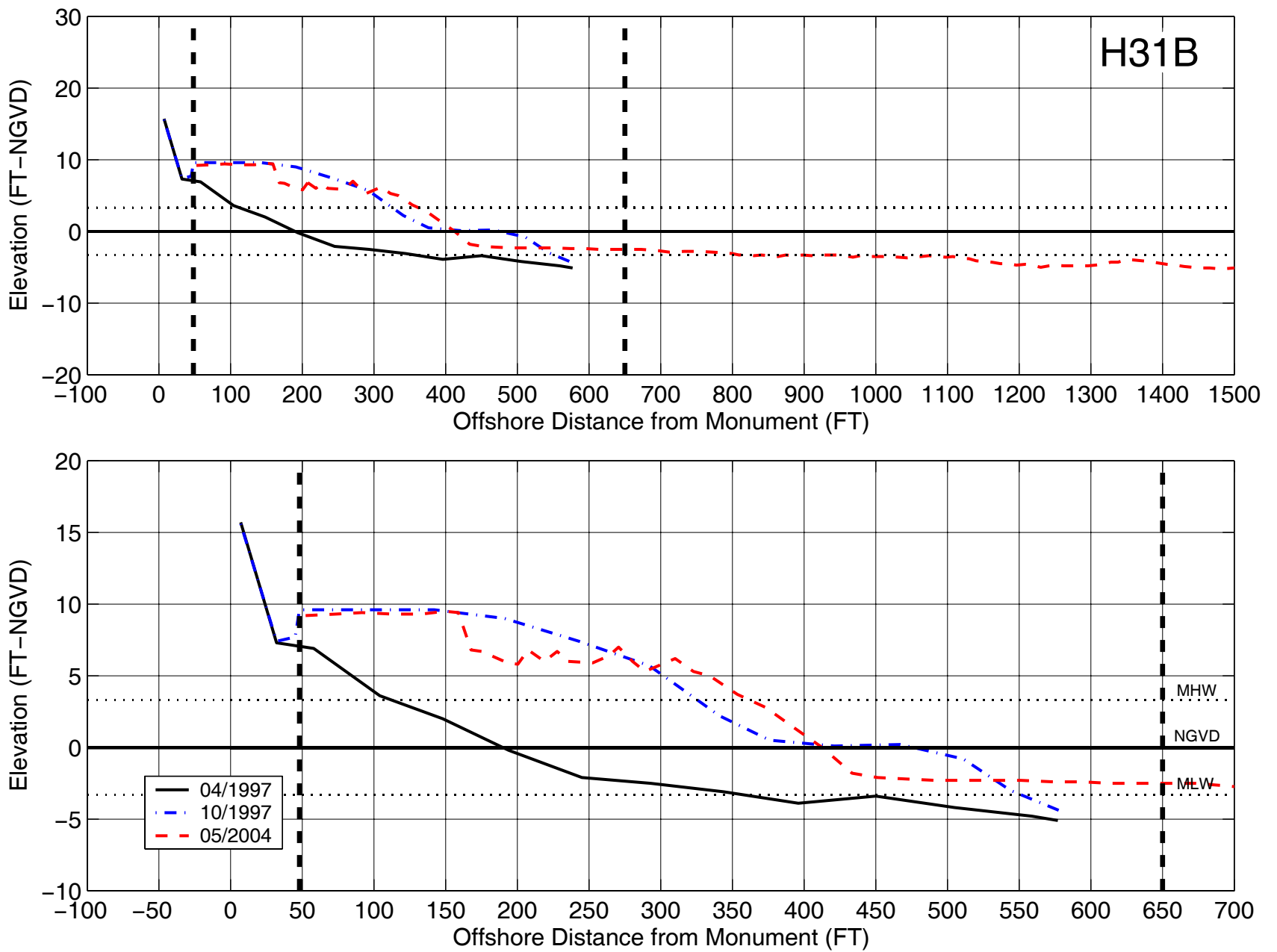


**Figure A-42:** Measured beach profiles at station H31A, Hilton Head Island, SC.





**Figure A-43:** Measured beach profiles at station H31B, Hilton Head Island, SC.



**Figure A-44:** Measured beach profiles at station HI32, Hilton Head Island, SC.

